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Prof. CHARLES F. CHANDLER, Ph.D., LL.D., Editor.

ARTHUR H. ELLIOTT, Ph.D., F.C.S., Associate Editor.

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ANTHONY'S

Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

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INTENSIFICATION WITH SCHLIPPE'S SALT.

Mr. W. E. Debenham before the Camera Club in London recently called attention to the intensification of gelatine plates with Schlippe's salt, and we have thought the matter of sufficient interest to recall the process as applied to wet plates and give some idea of the modifications necessary in the case of dry plates.

To begin with, it may not be out of place to explain to some of our younger or less scientific readers just what Schlippe's salt is, and how it is prepared.

Chemically it is Sodium Thioantimonate and has the formula $Na_3 Sb S_4 + 9 H_2 O$, and was called Schlippe's salt from the discoverer. It is obtained by digesting antimony trisulphide (black antimony) with sulphur, sodic hydrate (caustic soda), and water; or by melting together dry sodium sulphate 16 parts, antimony trisulphide 13 parts and carbon 5 parts; dissolving the mass in water and boiling with 2.5 parts of sulphur. The clear solution gives crystals of a yellow color and regular titrahedrons in shape. They are soluble in about 3 parts of water, and when exposed to air are soon covered with a red brown coating.

The use of this peculiar salt of antimony for intensifying was first suggested by Mr. M. Carey Lea, as long ago as 1865, for use in wet plate photography. His method is to convert the image into a haloid salt by treatment either with tincture of iodine, corrosive sublimate (mercuric chloride) or potassium iodide, or with a mixture of potassic dichromate and hydrochloric acid, and then flow with a solution of Schlippe's salt. By this means the image is converted into a scarlet deposit of thioantimonate of silver, which is of a very non-actinic character. The depth of the color will depend upon the completeness of the conversion of the silver image into haloid compound by the first treatment.

In applying this method to the intensification of gelatine dry plate negatives, the staining of the film of a yellow color is almost always the result. Indeed, any method of intensification with corrosive sublimate and either ammonia or sodium sulphite is liable to give a stained film; although this may sometimes be prevented by using hydrochlric acid with the sublimate which is said to stop the formation of a yellow combination of gelatine and mercury salt. In regard to this matter Mr. Debenham speaks as follows:

"In the original process for intensifying with bichloride of mercury and Schlippe's salt (sulphantimonate of soda) as applied to collodion negatives, not only did this combination cause, with the gelatine, a yellow stain on the plate, but the red color of the resulting negative made it very difficult to judge of the

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value of the deposit as a light stopper. By substituting iodide of mercury for the chloride these evils disappeared, and a process was obtained which he had used with satisfaction almost since the first introduction of gelatine plates for studio work, and which he would now demonstrate.

"A wide-mouthed bottle about one-third filled with saturated solution of bichloride of mercury, which had been poured off without disturbing the crystals at the bottom of the stock bottle, was moved with one hand so as to keep the liquid swirling round, and crystals of iodide of potassium were dropped in, their solution hastened by constant swirling, until the red precipitate at first formed was redissolved. This formed a strong solution, which might be used for very weak negatives, but generally it would be diluted with three or four times its bulk of water. One-half of a very thin negative was then immersed in this solution, and speedily gained intensity. It was then left washing for about half an hour, and afterwards flooded with a solution of Schlippe's salt, the strength of which it was stated was not material, but was conveniently used at about five grains to the ounce. It was of great importance that the negative should be properly fixed, and for this purpose new and strong hypo was advocated. Negatives not thoroughly fixed would in time show a brown stain without being intensified, but intensification made the stain visible at once. The plate must also be well washed between the application of the mercury and that of the Schlippe's salt. If after the iodide of mercury bath the negative was thought to be too intense, it could be reduced to any extent by immersion in a new hypo bath, and must then, of course, be well washed again before Schlipping. It was not desirable to keep the plate in the mercury solution long enough to become bright yellow; it should be brown by transmitted as well as reflected light."

Before applying Schlippe's salt the negative can be reduced to any desired extent by placing in the hypo-bath; and intensifying a second time, corrosive sublimate is the best material on account of the better color obtained.

We have not been able to try the above method personally, but judging from the interest taken in Mr. Debenham's negatives, shown at the Camera Club, his results must have been noteworthy. We hope those of our readers who are troubled with their negatives will give this method a trial, the main point being a thorough washing between the application of the mercury salt and the final application of Schlippe's compound.

EDITORIAL NOTES.

The gold from old toning baths can be removed by using sulphurous acid to precipitate the metal. The following is the *modus operandi*: "The acid, in solution, is added to the dissolved gold, and the whole heated for half an hour. At the end of that time the gold is all precipitated and can be filtered off at once—a rapidity which is not permissible by the ordinary means, as any one who is familiar with the process well knows. There is also avoided all trouble in getting rid of iron as in precipitation with iron salts."

Stolze, in the *Photographisches Wochenblatt*, recommends the use of aurine as a test for the acidity or alkalinity of an emulsion, and his plan is as follows: Plain collodion containing aurine is flowed on a plate, and a few drops of the emulsion to be tested are placed upon the dry film. If acid is present the collodion remains colorless, because aurine is insoluble in water in presence of acid; but if an alkali is present, a more or less pink color is obtained, since alkalies make aurine soluble in water.

In a recent issue of the *Deutsche Photographen Zeitung* we note a complete translation of our editorial on the new magnesium light, and the credit for the same is given to the *Photographers' World.* On referring to the latter periodical we find it gives us due credit for our work, and our German contemporary was either too careless or wilfully omitted to state the original source of the article. If we happen to fail to give them credit for anything that we copy they are overflowing with indignation.

A relief medallion in honor of Paul Pretsch, the inventor of photomechanical printing methods, is now being made in Germany, and will probably be ready in a month or so. This is a well-deserved honor to a most worthy son of applied photography.

Mr. I. H. Jennings recently published an interesting paper on making pictures from microscopic objects for lantern use. He recommends the use of the eye-piece, and says it does not affect the image and makes it easier for the operator to work. By using the eye-piece the work can be done in a camera with a twelve-inch bellows; while without the eye-piece the bellows will have to extend sixty or more inches. For light he uses a kerosene lamp with large wick, about six inches from the stage of the microscope. Between the microscope and the lamp a condensing lense is placed to focus the light well upon the object. The microscope is held in a horizontal position and the eye-piece is placed in the opening of the camera front that carryies the ordinary objective, the space around being made light-tight with black velvet. Such is the simple method of one of the best workers in photomicrography.

Mr. John Carbutt recently gave us some excellent examples of pictures made by the new magnesium flash light. One of these is called "Our Donkey Party," and exhibits a children's party in an ordinary room at 9 p.m. The faces are all quite good, while the shadows are remarkably full of detail. There are also two other groups of children in masquerade dresses; but the best of all is a group of three gentlemen sitting apparently in conversation, the picture being taken against a white background. The result in this last case is almost perfect, and it is difficult to realize that the picture was taken without sunlight.

M. E. Bouvin, in the *L'Amateur Photographe*, speaks of a new substance that gives great contrast with alkaline developers; it is called glucoside of ammonium. He prepares it as follows: Dissolve 10 grams of glucose (grape sugar) in 100 c.c. of ordinary ammonia solution, allow to stand some days, filter and add 100 c.c. of water; filter again and preserve in a well stoppered bottle. A few drops are sufficient to produce the desired result.

Our good friend J. M. Elton, of Palmyra, recently furnished the frontispiece for *Drake's Magazine.* A copy of the journal is before us, and the picture speaks well for the truly artistic drift of all Mr. Elton's work. The subject is called "His Latest Yarn," and was one of the pictures that took a prize medal at the Chicago Convention.

Mr. Henry C. Maine, of the *Rochester Democrat and Chronicle*, has recently taken some photographs of the moon that are of such a superior order that Professor W. R. Brooks, the astronomer of Red House Observatory, says that they are "of very great excellence." What makes this achievement still more notable is the fact that the reflecting telescope with which they were made, having thirteen inches aperture and seventy-eight inches focal length, was constructed by Mr. Maine himself. The brilliancy of the image is such that drop shutter pictures are possible. Speaking further of the pictures thus produced, Professor Brooks says that he was "surprised at the amount of detail shown therein."

SUGGESTIONS ABOUT DARK ROOM ILLUMINATION.

BY MAX BOELTE.

Which is the best way to illuminate a dark room?

This question has been often asked and many an answer has been given. Looking over the instructions which are furnished by the dry plate makers, we find that the majority recommend ruby or ruby and yellow light, and but few speak of yellow or a combination of yellow and green. It is not my desire or wish to enter upon a critical examination, or to praise or condemn one or the other, but to try and induce all workers in the dark room to get a convenient light which, being safe, gives the necessary amount of light to work with comfort and ease.

I have just returned from a long excursion, which has furnished me ample occasion to examine photographic studios, and I must confess that what I have seen impressed me with the desire to submit my ideas to the brotherhood in regard to a convenient way of lighting the dark room. The great majority of photographers still work under peculiar disadvantages, *i. e.*, they avail themselves of daylight; use ruby glass and yellow medium, or two thicknesses of ruby glass; and all of them work in the so-called old style, *i. e.*, they have their light opposite and right above their sink, and while developing the light strikes the tray. Many of them, in order to see the progress of the development, lift the plate out of the tray, hold it close to the light and examine it. Is this right, and is this the proper way? That is the great question. My idea is first of all, that daylight illumination should be dispensed with. Daylight is never of the same actinic power, it changes too much; and there is not only this liability to constant change in its power, but also the inconvenience that on dark days or late hours in the afternoon it is too weak, which are in fact great items, well worth taking into consideration. Artificial illumination is of course not as cheap as daylight. This however is not to be taken into too great consideration, for gas or petroleum are cheap enough, and if illumination by either of them comes into consideration, we have the fact that its respective illuminating power is, so to speak, always the same.

Artificial illumination offers the following advantages. First, we can have at any hour of the day, be it bright and sunny or rainy weather, just the light we need to carry on our work. Furthermore we have always the same quality of light, and by the judicious use of a stopcock or other contrivance we can regulate the quantity found convenient for our manipulations. There is still another point which merits consideration, and this is of real value. Using always artificial illumination, be it petroleum, gas, or even the electric light, the operator becomes accustomed to it, and soon acquires a knowledge which in developing is of great advantage, for he will soon learn how to estimate the appearance of the dry plate under treatment, and will not be compelled to resort to guesswork, as, on dark days and when using daylight, might be the case.

What screens or what sort of medium should be employed for artificial illumination?

Of course a combination of ruby glass and yellow medium offers a good and safe light; it is however too dark to see with distinctness and ease any bottles, trays, etc., which are at a little distance from the light. I would call the attention of the fraternity to the following plan, which for more than two years has been adopted by me, and which is based upon a simple physical law, *i. e.*: That the intensity of light diminishes inversely as the square of the distance from its source. In practice this law has been employed by many careful operators, but who, in employing it, perhaps did not bear in mind the reason they did so. In fact we often see that when a highly sensitive plate is to be developed, the careful operater not only protects it as much as he conveniently can against the light, but also goes to the darkest place of his dark room and as far away from the light source as he can. And only when the developing has proceeded he comes closer to the light. Now if you ask why he did so, you will be told by him that far away from the source of the light it has not such a powerful action upon the film. That is what practice has told him, and more he does not care for. It is not my intention to offend any one or the feelings of those more expert than I am, but as an observer I have had experience enough to convince myself of these facts.

My dark room illumination is as follows: I use a lantern made by myself and constructed of wood; its dimensions are 15 inches high by 18 inches in diameter. The original tracing was an octagon, of which I cut three sides away, thus leaving a hexagon, of which I use five sides for holding the translucent screens. The lamp, a round-burner petroleum (argand) burner, is placed in such a way that it is sharp eight inches from the screens, which are made of three thicknesses of yellow (sunflower) tissue paper between two glasses. The lamp has a double bottom and top, both provided with large air-holes, which admit plenty of air, but do not allow any light to escape. I have furthermore a so-called locomotive chimney over the lamp, and I have found that the ventilation is as perfect as can be desired. This lantern is placed nearly six feet from my developing table opposite and about six feet from the floor.

My dark room is flooded with light; yes, there is so much light in it that I can read a journal, and of course I can find any bottle, etc., with the greatest ease. I have worked plates of rather great sensitiveness, which having been under-exposed required a prolonged development, but I never have been able to discover the slightest trace of fog. For a long time my principle has been to expose any plate as little as possible to any kind of light, and when I fill my plate holders of course I do it as far away from my lantern as I can, turning the light down and shading the plate as much as possible. When about to develop a plate I also turn the light down, and as soon as the developer has acted a little turn it up again; this however is only necessary when extremely sensitive plates are used; even plates like Stanley's, Cramer 30's, etc., do not require this precaution. It is a well known fact that a plate which has been soaked for a little time is not nearly so sensitive as when dry.

The principle of my illumination is based, as already stated, on the fact that the power of the light decreases inversely as the square of the distance from its source. The burner of my lantern being at a distance of eight inches from the screens (which are translucent), represents consequently the figure 8 x 8 = 64. The distance from the closest screen of my lantern to the developing table is six feet, which multiplied by 12 = 72 x 72 = 5,184. Let us compare the illumination where we have a screen at a distance of four inches from the burner. This would give us 4 x 4 = 16, and the distance from the screen to the developing table to be an even 30 inches, which would give us 30 x 30 = 900. The difference existing between this latter figure and 5,184 is really striking. It is evident that when a light represented by the number 900 is considered safe, it must be still much safer if we use it at such a distance as is represented by the number 5,184.

Red and yellow light combinations, used as we generally find them, are of course good ; but when we consider the greater comfort and ease which an illumination as indicated by me gives, I feel sure that after only one trial it will be given the preference. For those who would like to make a trial, I will give a few little hints. The yellow tissue paper should be of that color which resembles the sunflower, and there should be three layers of it placed between two glasses, simply laid one on top of the other, but not glued or pasted together. As the color might fade in the course of time, the tissue papers should be renewed every eight or ten months. When using exceedingly sensitive plates, an additional screen of one thickness of tissue paper should be placed before the lantern.

CLEANING UP THE HANDS.

BY PROFESSOR PETER T. AUSTEN, PH.D.

THE method of cleaning up one's hands by means of potassium cyanide, while usually effective, is not particularly pleasant, especially for those who are not chemists, and hence not accustomed to handling deadly poisons. In fact the amateur had better go about with a dirty hand than undertake a cyanide wash, especially if he has any cuts in his fingers.

I suppose the following kink must be known to some of the old birds, but I have never seen it in print, and hence promulgate it for the benefit of the chicks. After work, and best before the stains have become quite black, give the hand a wash as follows: Pour into a cup about fifty c.c. of a ten per cent. solution of potassium dichromate, and add about ten c.c. of dilute sulphuric acid (one of acid to five of water). Wet the hands thoroughly in this liquid and rub them well. If spots resist the treatment, wind a towel about the forefinger, dab it in the wash, and scrub the spot. As a rule the color will come out. When well bleached wash the hands thoroughly under the tap. Then throw the wash out of the cup, rinse it, fill with water and add enough ammonia to give it a distinct odor. In this liquid give the hands another good soak and rubbing, and then wash off under the tap. Now, and lastly, give them a good scrubbing with sapolio, and after the final rinsing, if not as exquisite as one might wish, will still be very respectable for a chemist, and at night will not be noticed unless they be very small and beautifully made.

RUTGERS COLLEGE, N. J.

All communications for the columns of the BULLETIN *should reach us by Monday preceding the day of issue, to insure their publication at that time.*

[*From Deutsche Photographen Zeitung.*]

THEORY AND PRACTICE IN TAKING VIEWS ON COLOR-SENSITIVE (OR CORRECT COLOR-TONE) PLATES. ORTHO- OR ISOCHROMATIC VIEWS.

By L. Belitzki, *Nordhausen.*

(*Continued.*)

The plates, according to the latest prescriptions, being bathed only from one to two minutes, are not so wet as freshly made ones, and will therefore dry much easier and quicker. Still a certain caution ought to be observed to prevent subsequent defects. It is necessary that the bathed plates should dry from beginning to end without stoppage or cessation, because streaks will be visible in the negative at such parts of the plate where the drying was stopped, and it should be done only in pure, clear air, at 12 to 20 degrees C. To make certain that the atmosphere has caused no fog during drying, it is of importance to keep one of the plates to be bathed out of the color solution, and immerse it only half the time, one or two minutes, in distilled water, drying it at the same time with the color plates. This non-colored plate is marked upon the part to be bathed with a pencil, and is exposed the following day first of all, to make sure the bathed half is free from fog. If pure distilled water was used and the atmosphere was good, a difference can hardly be observed; but if a few drops of ammonia have been added to the water—which I would recommend—the bathed half has become more sensitive and shows in the development a denser picture, which has also to be entirely free from fog. If the color plates show fog, then the fault is in the color solution, or the plates were not sufficiently protected from the yellow or ruby light. If the work was done in the shadow of the ruby lantern only, nothing injurious from the light is to be apprehended.

Before I leave the topic of pure atmosphere, I have yet to remark that an experience gained in practical life (not a simple idea from the pen) has caused me much care and expense.

That sulphureted hydrogen, phosphoreted hydrogen, the vapors of volatile oils, etc., are injurious to photographic plates and produce fog, is a well known fact; but that the above can also originate from fuel I did not know before, but convinced myself about it some two years ago after putting a new stove for anthracite coal into my workshop and dark room. All plates dried by the heat from this stove became foggy and were unfit for use. At first I imagined the reason for this to be in the evaporation of a newly-oiled floor; but after many investigations and experiments I convinced myself that the cause of all this was from the fuel. The anthracite coal was extremely sulphurous, but the combustible material contained, contrary to my expectation, no sulphureted hydrogen. I observed no infection of the atmosphere; stove-pipes and chimney were in the best order, and the latter had a strong draft. After a new supply of coal the defect seemed to have been removed, but some time later, when burning up some coal left from the first lot, the fog appeared again. These facts also give sufficient cause for sanitary reflection.

If one has a well ventilated room that can be heated and darkened in a manner that it can be entered in the daytime without letting any light in, the most simple way is to have the bathed plates on a drying rack, at least four cm. distance from each other. In three to four hours they will surely be dry. If such a room is not at disposal, a small drying closet will have to do the same service.

This must be made of well seasoned wood with hermetically closing doors. Conformable to the purpose is also a skeleton closet covered with pretty thick pasteboard. This closet is fastened to a suitable wall; from the upper part a pipe leads into a chimney, and another pipe connects with the closet from below, admitting fresh air. To test the closet put a light into the same at night when the room is entirely dark, and see if it is absolutely light-tight. It should not be varnished or painted.

The exposure of the color-sensitive plates differs from the ordinary plates in the length of time. Color plates as a general thing have to be exposed longer for white light and without yellow glass. But for colored, yellow, green and red light, as well as behind a yellow glass or illumination at night, they are more sensitive than ordinary plates. An exception are the eosine (or erythrosin) silver bath plates, which are generally more sensitive than ordinary ones. If objects are to be taken without any light blue, violet or light pink, it can be done without yellow glass; also in the evening, near sunset, when the light is yellow; or with gas or kerosene light there is no necessity of yellow glass. Ordinarily the action of the color plate shows its value first by application of the yellow glass or a satisfactory lighting throughout.

Many propositions have been made to find a substitute for the yellow glass, and some of them may be quite acceptable for the purpose; but as I have never tried any of these, and the production and application of the yellow glass being comparatively easy, and the results certainly good, I will mention what is necessary about that.

To begin with, a clear, colorless, thin plate glass should be procured and examined thoroughly, so that no scratches or stripes will show on the reflecting surface if held edgewise, otherwise the glass is unfit for use. After a suitable piece has been found, it is fastened inside on the face of the camera close behind the lens, so that it can be taken off again easily. The glass is now flowed evenly with yellow collodion, the same way as in the wet process. After the collodion is dry the plate is ready for use.

Professor Vogel gives the following simple formula for the preparation of yellow glasses: 100 grams plain collodion with 1¾ per cent. collodion cotton are mixed with 0.4 gram aurantia (a yellow coal-tar color). After good mixture and dissolving it is left to settle. Glasses prepared with this collodion are the darkest which are required. It is sufficient for many views, particularly for landscapes, to use only 0.2 or 0.3 gram of aurantia to 100 collodion; and generally the yellow glass is not used darker than just necessary to reduce the strong action of the blue.

The application of the yellow glass prolongs the time of exposure from two to ten times, according to the intensity of the yellow. Two glasses placed together are not advisable.

The development of color-sensitive plates differs in no respect from the ordinary ones, only that they should be handled in the shadow of the lantern. The same is true in bathing in the color solution or putting the plate into the holder. The greatest care to guard against the red light is only necessary during the first minute of development; after the image has completely appeared the negative can be inspected from time to time in the red light without danger, and towards the end the manipulation is as usual. The development can be done with iron or pyrogallic acid. Having had no good luck with iron in the development of color-tone correct views, and pyro being now mostly recommended for this purpose, I have used it preferably.

All who so far felt constrained to separate from the iron, will find here a suitable opportunity to become acquainted with the pyrogallic acid which would be of advantage to them even for ordinary plates, this developer having many good qualities missed in the iron one. I recommend as excellent, Cooper's developer, as follows:

No. 1.

Pyrogallic acid (best)	14 grams.
Sodium sulphite	100 "
Sulphuric acid (c. p.)	10 drops.
Water	500 c.c.

Without the sulphuric acid this solution would keep for a few days only.

No. 2.

Sodium carbonate (crystal)	50 grams.
Water	500 c.c.

No. 3.

Potassium bromide solution	1 to 10.

For one plate 13 x 18 cm. is ordinarily taken

No. 1	15 c.c.
No. 2	15 "
Water	30 "

For short exposures the quantity of the carbonate of soda can be doubled, while for long exposures up to 5 c.c. may be taken off. In short, wherever it is doubtful the commencement should be with but little of the soda, gradually adding it when necessary. Bromide of potassium is also a helping agent for long exposures, by adding a few drops; and fogs that might appear can be restrained with a little of it.

After development, which takes under normal conditions from three to five minutes, sometimes longer, proceed as ordinarily, washing well before the negative is fixed. To prevent frilling, an alum bath might be used before fixing. In most cases, particularly with eosine, the coloring matter disappears entirely in the fixing bath; with azalin it lasts longer and many times some color will be left in the picture even after washing for hours; but this will do no harm. The last traces of color can be removed by putting the plate in some alcohol.

One circumstance I have yet to mention. A plate developed with oxalate of potassium and washed for one minute may be examined for a short time only in daylight before fixing; but if this is done with a plate developed with pyrogallic acid, the developer continues to act on the unlighted parts of the negative and takes all its brilliancy, and upon the back of the unfixed negative can be seen a very distinct positive. Therefore all pyro negatives have to be washed well and must be kept from daylight before fixing.

Before I conclude, I will give a few tried formulas for color-sensitive bath plates, and I would also call attention to the extreme difference in the concentration of the color solution in these prescriptions; but I will give at the same time proper explanations why they are good.

In No. 1, for instance, is recommended 1 part erythrosin to 8,000 parts of water, while in No. 2 the same coloring matter is prescribed only in proportion 1 to 40,000, therefore only one-fifth the strength of the former. A preliminary bath of weak ammonia for two minutes should be first given, and then into the color bath for 1½ minutes. The plate, already considerably swelled in the ammonia, cannot of course any longer take up much more coloring matter, while in No. 2 the plate without preliminary bath, therefore dry, is placed in the much weaker solution from two to four minutes, and the latter in an unchanged state is taken up by the plate and produces almost the same coloration.

Whether it is better to apply a preliminary bath, or to place the dry plate in the color bath; or whether the latter, as in No. 3, is to be poured upon the plate, I do not venture to decide conclusively. Every one of these formulas has certainly its advantages.

In No. 1 the plate is prepared and cleaned by the preliminary bath, so that the color solution remains much clearer. No. 2 is the most simple formula, but all dust from the plate remains in the preliminary bath and is apt to spoil the succeeding plates. No. 3 is more circumstantial than the former two, but the color bath cannot be contaminated, as a quantity of fresh solution is poured upon the plate each time.

In No. 4, azalin bath, the *Photographische Mittheilungen* of June, 1887, recommends 20 cm. azalin solution to 80 parts of water. If the azalin solution, 1 to 1,000, is accepted, the final dilution will be 1 to 5,000; but that is much too strong for azalin, if dry plates are bathed even for only half a minute. Therefore from two to four times as much water must be taken, according to the condition of the plates to be bathed. A deficiency of these formulas is in the strength of the ammonia, which is not mentioned in any of them. The one I take is of 0.90 specific gravity, and contains 25 per cent. ammonia gas.

No. 5, erythrosin silver bath, is quite excellent, particularly for landscapes, giving color plates which can be used without yellow glass. The silver solution mixed with the color solution gives a magnificent red deposit of erythrosin silver, which dissolves again in the prescribed quantity of ammonia. Unfortunately these plates will keep only for about a week.

Formulas.

No. 1.

(From Mallman and Scolik and recommended by V. Schumann.)

PRELIMINARY BATH.

Ammonia	1 part.
Water	100 parts.

Immerse plate for two minutes.

COLOR BATH.

Erythrosin, 1 to 1,000	25 c.c.
Ammonia	4 "
Distilled water	175 "

Cover and move the tray one and one-half minutes. After the sixth plate add 1 c.c. ammonia.

o. 2. By Dr Eder.

Erythrosin	2½ c.c.
Ammonia	½ to 2 "
Distilled water	100 "

Two to four minutes' bathing without preliminary bath.

No. 3.

Erythrosin, 1 to 1,000	25 c.c.
Azalin	2 " (?)
Ammonia carbonate, 1 to 6	50 "
Water	1,000 "

Rinse plate well and flow with first solution.

No. 4.

AZALIN BATH.

Azalin	20 c.c.
Ammonia	2 "
Water	80 "

One minute's bathing.

No. 5.

ERYTHROSIN SILVER BATH.

Erythrosin in water, 1 to 1,000	50 c.c.
Silver nitrate in water, 1 to 1,000	50 "
Ammonia	2 to 3 "
Water	100 to 200 c.c. (200 better).

One minute's bathing without preliminary bath.

Translated by H. D.

THE METRIC SYSTEM AND THE ADVANTAGES TO BE GAINED BY ITS USE IN PHOTOGRAPHY.

BY JAMES H. STEBBINS, JR., S.B., M.S.

[Read before the Society of Amateur Photographers of New York.]

WHILE reading over the September number of this society's Proceedings, I came across an article by Mr. Robert B. Roosevelt, entitled the "Standard of Developers," and as I find therein contained many points worthy of discussion, I will take the liberty of making a few comments upon the same.

To begin with, Mr. Roosevelt says, "nothing has stood more in the way of the amateur's acquisition of the best method of photographic manipulation than the confused and the confusing, muddled, misleading, and thoroughly unscientific way in which the formulas for developers have been made up." With this I fully agree, for to me, who am accustomed to use nothing but the metric system of weights and measures, the existing formulas appear as incomprehensible as Chinese.

Further on Mr. Roosevelt says: "A favorite plan of some reformers is the substitution of French for American weights and measures, and incidentally or independently, the use of ten per cent. solutions. These plans, one or both, have been pressed upon us as a correction of the difficulty, but they do not meet the case. We do not want a purely scientific manuipulation, and the gram will never be our Moses, nor foreign or unusual terms or scales guide us out of our wilderness."

In answer to these quotations, I would say that I appreciate the efforts of these reformers in trying to introduce a system of notation which is simplicity itself, and am only sorry that they did not succeed, as I think the metric system is eminently fitted to meet the case. The only explanation that I can give to its want of success, is simply owing to the fact that we Americans have been accustomed to use the English system of weights and measures, and will not take the trouble to thoroughly master the metric system, because it looks a little perplexing. I likewise fail to see why it is that we do not want "a purely scientific manipulation," provided it is simple and easy of comprehension. It is the custom of all scientific men and societies throughout the world to use the metric system, and as our society is a scientific society, is it not time that we followed suit? I cannot see what grudge Mr. Roosevelt bears against the gram, as it is just as tangible a unit as a cent. No one will say that it is a difficult task to divide a dollar into cents, and yet it is just as simple to divide a hectogram into grams, and I think that I will be able to convince you of this later on. I further quote, "what we need is something for every-day use that the least experienced, equally with the most expert, can understand at a glance, employ with absolute certainty, and remember without difficulty." I quite agree with this sentiment, and would say that the metric system fills all these conditions. I further quote, "talking in centimeters or multiplying by decimals is a useless confusion." I was never aware before this that multiplying by decimals is a confusing operation. I was always much more perplexed when multiplying by vulgar fractions. As regards talking in centimeters, I would say that it is quite as easy to do this as it is to talk in dollars and cents.

Further on I find the following quotation: "A 10-grain solution, which is often mistaken for a ten per cent. one, would be entirely proper, but a percentage of hypo, or any other solid, to water is closely allied with the result of multiplying ten oranges by ten pears." And so it is as long as English weights and measures are concerned, but it is entirely a different matter when the metric system is employed, because it is perfectly easy by its means to convert the measures of capacity into the measures of weight and *vice versa.*

It is further suggested in Mr. Roosevelt's paper that we should determine upon a certain formula of a fixed strength according to fluid drams, and that solutions of this kind shall contain a given quantity of grains to the dram. I do not see that this method offers much advantage over the ones now in use, as it would still entail the use of grains and drams, which I consider exceedingly awkward to handle. Why not substitute the much abused gram and cubic centimeter, and tackle the complicated decimals? There is no need for me to make any more quotations from Mr. Roosevelt's paper, as I think that I have already said enough to convince you of the muddled state of affairs, and this condition of things will exist so long as you persist in using English weights and measures. Therefore, contrary to Mr. Roosevelt's advice, I strongly recommend the use of the metric system.

As this system of weights and measures may appear complicated to some of you, I will now endeavor to make the matter clear.

The measure of length is called the meter. It represents the ten-millionth of the distance on the earth's surface from the equator to the pole.

The multiples of the meter are the decameter, or 10 meters; the hectometer, or 100 meters; the kilometer, or 1,000 meters; and the myriameter, or 10,000 meters. The submultiples are the decimeter, or $\frac{1}{10}$ meter; the centimeter, or $\frac{1}{100}$ meter; and the millimeter, or $\frac{1}{1000}$ meter.

Please remember the terms deca, hecto, kilo, myria, deci, centi, and milli, as they are used throughout the whole system, and mean the same thing each time.

The unit measure of weight is the gram. It is represented by the weight of one cubic centimeter of distilled water at its greatest density, viz., 4 degrees C.

The multiples of the gram are the decagram, or 10 grams; the hectogram, or 100 grams; and the kilogram, or 1,000 grams. The submultiples are the decigram, or $\frac{1}{10}$ gram; the centigram, or $\frac{1}{100}$ gram; and the milligram, or $\frac{1}{1000}$ gram.

The unit of volume or capacity is the liter. Its multiples are the deca or 10 liters; the hectoliter, or 100 liters; the kiloliter, or cubic meter, 1,000 liters. Its submultiples are the deciliter, or $\frac{1}{10}$ liter; the centiliter, or $\frac{1}{100}$ liter; and the milliliter, or cubic centimeter, $\frac{1}{1000}$ liter.

There are some other measures, such as measures of surface, etc., but I will say nothing of these as there is no use for them in photography.

You have doubtless seen from the foregoing that the metric system is not so formidable as it appears. Its great advantages are its decimal character of notation and the ease with which it is possible to convert measures of volume into measures of weight. For example, suppose it should be desired to measure out 500 cubic centimeters of water, and our glass graduate could not be found, or was broken; then, bearing in mind that a cubic centimeter of water weighs just 1 gram, place a 500-gram weight upon your scales, and weigh the water out.

The great difficulty of understanding the metric system arises from the fact that in converting one into the other we obtain fractional numbers which are very confusing. Therefore I say that if you want to fully comprehend the metric system, drop the English system from your minds entirely, and do not attempt to make comparisons between the two. Buy yourselves a set of metric weights and a fluid graduate, and you will have no further trouble.

To still further facilitate matters, I have converted the leading developer recipes into the metric system; and have done away with fractions as much as possible in order to prevent confusion. Of course the figures I give you are not absolutely correct, but they are near enough right for photographic purposes.

Developer No. 10 for Cramer's Plates.

Alkaline Solution.

Sodium sulphite (crystals)	35.5	grams.
Sodium carbonate (crystals)	8	"
Potassium carbonate	5	"
Water	500	c.c.

Pyro Solution.

Sodium sulphite (crystals)	10	grams.
Pyro	80	"
Sulphuric acid	2	"
Water	500	c.c.

Directions.—For winter use 65 c.c. alkaline solution and 2 to 6 c.c. of pyro solution. For summer add to 34 c.c. alkaline solution, 34 c.c. cold water, and from 2 to 5 c.c. of pyro solution.

Developer for Seed Plates.

Pyro Solution.

Sulphite of soda (crystals)	185	grams.
Pyro	30	"
Water	500	c.c.

Alkaline Solution.

Sodium carbonate (crystals)	125	grams.
Water	500	c.c.

Directions.—Add to 185 to 305 c.c. of water, 30 c.c. of pyro solution and 30 c.c. of alkaline solution.

Developer for Ripley Plates.

No. 1.

Sodium sulphite (crystals)	115	grams.
Citric acid	7	"
Ammonium bromide	3.5	"
Pyro	50	"
Water	500	c.c.

No. 2.

Sodium sulphite (crystals)	100	grams.
Potassium carbonate	150	“
Water	500	c.c.

DIRECTIONS.—Mix 7 c.c. each of Nos. 1 and 2 with enough water to make 100 c.c.

FERROUS OXALATE DEVELOPER FOR RIPLEY PLATES.

No. 1.

Potassium oxalate	250	grams.
Water	1,000	c.c.

Oxalic acid enough to make solution acid to litmus paper.

No. 2.

Ferrous sulphate	80	grams.
Sulphuric acid	0.5	gram.
Water	1,000	c.c.

DIRECTIONS.—To 64 c.c. of No. 1, add 31 c.c. of No. 2, and 1 c.c. of bromide of ammonium solution.

DEVELOPER FOR EASTMAN'S PERMANENT BROMIDE PAPER.

No. 1.

Potassium oxalate	330	grams.
Acetic acid	9	c.c.
Water	1,000	“

No. 2.

Ferrous sulphate	500	grams.
Acetic acid	1.5	c.c.
Water	1,000	“

No. 3.

Bromide potassium	31	grams.
Water	1,000	c.c.

DIRECTIONS.—Take 125 c.c. of No. 1, 20 c.c. of No. 2, and 1 c.c. of No. 3.

CARBUTT'S HYDROQUINONE DEVELOPER.

No. 1.

Sodium carbonate	55	grams.
Water	500	c.c.

No. 2.

Hydroquinone	13.5	grams.
Sodium sulphite	70	“
Water	125	c.c.

DIRECTIONS.—No. 1, 10 c.c.; No. 2, 15 c.c.; water, 65 c.c.

PIFFARD'S HYDROQUINONE DEVELOPER.

Hydroquinone	6	grams.
Sodium carbonate	30	“
Sodium sulphite	30	“
Water	450	c.c.

Use as mixed and return to bottle for future use.

HOOVER'S DEVELOPER.

No. 1.

Sulphite of sodium (crystals)	80	grams.
Citric acid	6	“
Ammonium bromide	3.5	“
Pyro	42	“
Water	500	c.c.

No. 2.

Sodium sulphite (crystals)	80	grams.
Potassium carbonate	125	“
Water	500	c.c.

DIRECTIONS.—For proper exposures take 6 c.c. each of Nos. 1 and 2, and 80 c.c. of water.

Piffard's Pyro Developer.

No. 1.

Sulphuric acid	1	dram.
Sodium sulphite	100	drams.
Pyro	25	"
Potassium bromide	1	gram.
Water	400	drams.

Dissolve in the succession given and add water sufficient to make the whole measure, 500 c.c.

No. 2.

Sodium carbonate (crystals)	50	grams.
Potassium carbonate	25	"
Sodium sulphite	25	"
Water	400	c.c.

Dissolve and add sufficient water to make the whole measure 500 c.c.

Take 10 c.c of each and add 80 c.c. of water. These proportions to be varied with the exposure and kind of plate used.

Factors.

Weight Equivalents.

To convert grains into grams, multiply by 0.065.
To convert grams into grains, multiply by 15.5.
To convert drams into grams, multiply by 3.9.
To convert ounces avoirdupois into grams, multiply by 28.4.
To convert pounds avoirdupois into grams, multiply by 453.6.

Measure Equivalents.

To convert cubic centimeters into grains, multiply by 15.5.
To convert cubic centimeters into drams, multiply by 0.26.
To convert cubic centimeters into ounces avoirdupois, multiply by 0.036.
To convert pints into cubic centimeters, multiply by 473.
To convert liters into ounces avoirdupois, multiply by 35.3.
To convert gallons into liters, multiply by 3.8.

COMPOSITE PHOTOGRAPHY.

BY ELLERSLIE WALLACE.

[Read before the Photographic Society of Philadelphia.]

Fronti nulla fides.

Out of the mixed mass of matter that modern photography presents to us, there are some things that would be better suppressed altogether. It is a matter for great regret that considerable numbers of those practicing our beautiful art do not scruple to lower it to absolute quackery, sometimes to revolting indecency, often to the multiplication of "cheap and nasty" forms of design, and still oftener to silly pastime or childish absurdity.

With many persons, indeed, the idea seems to be to pursue photography in any and all ways rather than the legitimate ones that have rendered it so useful to the world and so universally and justly admired.

I do not propose to enter at any length into a subject like this, which must have forced itself upon the attention of every thinking man who has any interest in the camera; but there is one of these absurd quackeries that seems to be commanding the serious attention of people of education and attainments and who really ought to know better. I allude to the so-called composite photography. Now it is well to have the desire of hearing new things and seeing new inventions; but when I see such nonsense as composite photography gravely treated in a scientific manner by respectable magazines that are read by the general public, and even by the journals devoted to our own craft, I can only say that it makes me feel very sorry.

Composite photography claims to give a normal type or average of the features of a number of individuals; and the assertion that each exposure on each subject partially destroys and partially adds to the image previously existing on the film is just one of those nicely contrived bits of scientific speciousness that can easily hoodwink any one not understanding the technical part of photography.

If a draughtsman draws on a rough-cast wall with a chunk of dry color, or on the smoothest of paper with the finest pointed pen, he makes an outline in either case, because he attempts the representation of one object in one place. Composite photography attempts the representation of an unlimited number of objects in one place.

For the same reason we cannot compare the composite with a badly focused plate, because the latter has an outline no matter if the image be hardly discernible. The form is there just as it is in the drawing on the rough-cast wall.

A composite photograph cannot claim to be a picture in any sense, because it is merely a jumble of uncombined outlines. The expression "uncombined" is a foolish one perhaps, for two outlines cannot be combined upon the same surface or film. Let us take an example from the stereoscope. Here we have two images, the same in size to a hair's breadth, just as the images of any object are when formed upon the retinas of the eyes. The only difference between them is that the one taken with the right hand lens gives a rather more right hand view of the subject, and *vice versa.* How are they made to combine? By means of an ingenious and beautiful optical trick which diverts the lines of vision from their normal course; the prismoid lenses of the stereoscope acting in the one case, and the simultaneous outward rotation of both eye-balls (binocular vision) in the other, when no stereoscope is used. But suppose we cut a stereo slide in two, set each half in a magic lantern, and project the images on a screen. We may make them overlap, but have we combined them to a perfect whole? No. So, in the stereoscope, the images are but apparently combined, and the very beauty of the quasi-solid picture lies in its unreality.

I take it that any picture to be a picture must have an outline. A composite of ten sitters made with ten exposures, no matter how carefully graded, would have ten outlines. Is it therefore ten times a picture? It certainly is not ten pictures. We have ten outlines, each striving for the dominant position, but we know that two outlines can no more occupy the same place than two bodies can occupy the same space at the same time.

Let us suppose that twenty of us here to-night were walking on a beach by the sea, and that we determined to make a composite foot-print in the wet sand. The form of each man's foot would then be impressed over the preceding one, and the result would be a lot of tramped down sand, nothing more. This comparison with composite photography is a perfectly just one.

Again, suppose the twenty of us were to commission one of the number to go to some sculptor or molder in clay and request him to make a composite statue of the whole twenty, with or without twenty outlines. I should rather expect him to be answered as the old gentleman was who desired the London judge to recover his stolen property for him, "Sir, does your mother know you're out?" This comparison also is a perfectly just one.

I have recently seen a type composite of some seventy lady graduates of a well-known college. While I am hardly in a position to judge of the intellectual average thus shown, I can say that a phrenologist would look in vain for the bump of photographic common sensitiveness or chemico-physical comprehensivenesss.

If I am entirely wrong in this matter, however, and if such a thing as composite photography really exists, I shall always regret that I did not attempt some composites of European scenery when abroad with my camera a few years ago. "What is sauce for the goose is sauce for the gander," and if it is possible to make a composite of eighty different people, it is also possible to make one of eighty different outdoor views. I think that a composite of English cathedrals, Dutch windmills, French and German timbered houses, Belgian hotels de ville, Swiss mountain scenery, and street views pretty much everywhere, all combined on the same plate, would have been a new departure in landscape photography, and together with the portrait composites might well bear the title—

"Confusion now hath made his masterpiece."

A FEW PHOTOGRAPHIC POINTS ABOUT THE YOSEMITE VALLEY.

[Extracts from an Address before the Photographic Society of Philadelphia.]

BY GEORGE VAUX, JR.

WITH so much that is stupendous, grand, and beautiful, the chief difficulty which one has to encounter is in knowing how to put in his time to the greatest advantage in order to get views of the more celebrated and interesting points. Winding along through the fine old forest, occasional extended panoramas are obtained of the valley of the Merced River, which flows the whole length of the Yosemite, and leaving it, wanders on amidst mountain ranges to the level expanse of central California.

Presently through the trees you catch glimpses of a mountain with square cut and perpendicular faces. It is El Capitan. A short distance further the stage stops at Inspiration Point, where the first good view of the valley is obtained. It is spread out at your feet, and though owing to a turn in it, the further end and about half of the north side are not visible, you will want to make an exposure or two, showing Bridal Veil Fall, the Three Graces, Sentinel Rock and Dome, the South Dome, Cloud's Rest, and to the left close at hand, the enormous mass of El Capitan. Unless you should happen to have as stage companions a very crusty party, you will find no difficulty in getting a sufficient delay to accomplish all that is necessary, and as the light is admirable at the hour the stages usually pass (about noon) it is best to make the most of it then, for the nicest route on leaving the valley is to follow another way.

Zigzagging down the mountain side, where it would seem almost impossible to build a road, the surrounding walls appear to gain rapidly in altitude. About three-fourths of the way down to the level of the floor is Artist's Point, from which a somewhat similar view is obtained from that at Inspiration, though of course you are looking up to the summits of the various high points, instead of viewing them from more nearly on a level.

Having made the descent, the Bridal Veil is the first point of interest. Leaving this, after passing El Capitan, the Three Brothers, and finally the Yosemite Fall come into view. You are now nearer the upper end of the valley, and here all the hotels are situated.

By all means do not hurry; but should you be pressed for time, it is possible to get all the most important views in a very short time considering their number.

You reach the hotel about half-past one, and will then have the afternoon to look around in a general sort of way.

But before planning in detail, I will just say a word as to the time of year. Let this be as early as the roads are good, say the middle or end of May, varying with the season. As all the streams around the Yosemite are fed by melting snow, if you want to see the waterfalls in all their magnificence this is important, for by the middle of June many of them are dried up, and two months later those that are left are comparatively mere dribbles.

The next morning after your arrival, retrace your steps down the road you followed the day before. A mile and a half is about as far as you will care to go. During this trip you get the Cathedral Spires and Rocks to advantage, also the upper side of El Capitan and the Three Brothers. The light on the lower side of the former is better in the afternoon, so it is not worth while to go further than is necessary to get the Cathedral Spires. For El Capitan there is the favorite position, showing the Merced in the foreground, which always makes an effective picture. You will have no difficulty in finding the place, as it is but a short distance from the road and easily accessible. If you have timed your excursion properly, this will bring you back to the hotel by about eleven o'clock without hurrying.

The Yosemite Fall is the next thing in order. Perhaps the finest view to be obtained of it, without showing any disagreeable or inharmonious surroundings, is in a meadow by the river bank. Just the right point is a little hard to find. You cross the field in front of what is now Cook's Hotel, following the path for some distance, and then turn to the left till you reach the river, up which you keep till you are certain you have gone too far. Then keep on a little further, and you will come to a point from which the 2,600 feet of the fall is in splendid view, framed by trees, a vista cut through which makes this position available. An upright view from this point takes in the river in the foreground, and the fall covers enough of the plate to make shutter work quite satisfactory. Among its chief beauties are its ever varying moods as it is swayed back and forth by the wind, whose power on a column of such a length is enormous. Between eleven and one o'clock is the best time for this view. The Lower Yosemite Fall alone also makes a very effective shutter picture; but owing to its location it also must be taken in the morning, as it is the first part of the fall that the sun gets off of, so that unless you have the early part of the day for it alone, you will probably have to be satisfied with a distant view, where it forms but a part, and a small part at that, though over five hundred feet high. Should you go there in the morning however, follow up the trail till you come to an enormous boulder, to the left of which you pass. From just alongside of it a good upright view can be gotten. A viewing lens of the ordinary angle will just take it in nicely. The trip down the valley will pay better however if you have to make a choice between the two.

About two or half-past two take a carriage and drive up the Valley a short distance, cross the river and turn down again. Just after crossing the bridge a very fine view of the North Dome on the one side and its riven companion, the South or Half Dome, on the other can be obtained. Down about a half a mile further you can get Sentinel Rock to advantage, with a rustic foreground, though there is a rather better point down a little further. From near where the short branch road stops, which leads to the foot of the Yosemite Falls, an effective wide angle picture of the falls is obtained, but the point of view is not so attractive as that from the river bank.

It is a little below this point, on the main road, that the view of Sentinel Rock referred to above, with the river in the foreground, is obtained. Not far from the same place, but a little further on, you can get a magnificent mirror view of the Three Brothers early in the season only, for the reflection is in a sort of puddle which soon dries up I believe. Down still further you get a superb view of the square façade of El Capitan. By this time in the afternoon the light is just right.

Crossing the river once more you come out at the foot of the Bridal Veil Fall, the light being full on it. In the afternoon the most beautiful of rainbow effects are produced. From among the rocks between the road and the foot of the fall a number of fine positions are attainable, though some old pine trees so close at hand as to detract from the height of the fall are difficult to manage, owing to the rough character of the ground. A little perseverance will overcome them however. The return route to the hotel is the same as has been already traversed more than once.

For the second day by all means take the trip to Yosemite Point, an eminence just above the summit of the Yosemite Fall. It is not necessary in order to get the light to make a very early start for this trip, say 7.30 or 8 o'clock, and do not be persuaded not to take lunch along with you. The trip will take longer than you have anticipated if you are loyal to your camera, for there are many fine views from the trail on the way up. For a time you are among the underbrush and can see but little, but after gaining an elevation of about a thousand feet you come out at Columbia Point, from which you may get a very fine view up the Valley, embracing near at hand the Half Dome and Cloud's Rest, while stretched away beyond are the rank and file of the high Sierras, all more or less snow clad if you are only early enough in the season. The light will be better for this view during the descent.

Continuing a short distance you come to a level space, on about the same altitude as the foot of the Upper Yosemite Fall. If you reach this point on the return not later than half-past two you can get a fine shutter view.

The trail now zigzags up a very narrow and steep side cañon. It is hard work on both nerves and strength, because you feel as if you were going to slide off of your horse. An hour more will bring you to the top, whence by a short walk, followed by a scramble along a narrow ledge, where one misstep would send you down a quarter of a mile or more before you would strike, you reach a place where you can look immediately down upon the top of the fall. There is no room for a camera there however.

Crossing the creek just above the fall and continuing half a mile or more over a disintegrating ledge of white granite, you reach Yosemite Point. Here there are fine views in both directions, showing the valley lying at your feet, with the High Sierra, with which you are now more nearly on a level in the background. Almost immediately opposite you is Glacier Point, so named apparently because there isn't any glacier there.

You can continue this trip to Eagle Peak, the highest of the Three Brothers, but from all I could learn it is doubtful if it would pay for the extra fatigue.

Whilst the afternoon sun is on the fall the rainbow effects are beautiful and should not be missed. On the descent the light will be good, though as I said before, do not leave it too late to get the upper fall, or the Three Brothers will have cut off the sun. Sometimes people try to make this trip in half a day, and it is of course better to do it so than not at all, but a whole day is much more satisfactory.

For the last day, according to my plan, you will need every plate you can arrange for. Making an early start you take a wagon and drive to Mirror Lake to see the sun rise. Before the first ray strikes the water the reflections are wonderful and by a little activity you can get all the principle ones before the sunlight spoils them. This done the wagon takes you to the foot of the Vernal and Nevada Falls trail. Here you should have arranged for saddle horses to meet you. Before mounting, get the view of the North Dome from the bridge over the stream, with the latter and the majestic trees on its banks as a framework for the mountain; also from just beyond the bridge a very effective view of Glacier Point.

A short ride up a good trail brings you to the Vernal Falls. The light on these is only good in the afternoon, so that at this time of the day the view is unsatisfactory, but by delaying as long as the guide will allow, you may be able to get a picture.

Remounting, a steep scramble followed by a descent, takes you over a ridge from just beyond whose summit a pretty panorama of the Nevada Fall, Liberty Cap, and Mount Broderick is obtained. The view of the back of the Half Dome is also very good, but there are finer ones later.

Mrs. Snow, who keeps the little Casa Nevada, will soon get you up a very comfortable lunch, and while she is preparing it, or better, if there is time, after you have lunched, you will have a grand opportunity to get the Nevada Fall to perfection, perhaps the most exquisite waterfall in the world. The best view is from near the foot of a large pine tree on the foot-path from Snow's down to the stream. Do not fail to follow on across the log bridge and up as close to the fall as you can go without getting soaked. The view will well repay you, although there is no opportunity for a picture owing to the spray.

The trail follows up a very steep cañon a short distance from the fall, doubtless once the bed of the stream. While the ascent lasts it is probably the steepest that you will encounter during the trip to the Valley, unless you should climb some of the higher mountains. If you have a good head, get the view down on top of the fall from the summit. The place from which it is obtained is a very dangerous one, but by laying down flat there is but little risk.

From this point there is a long ascent, but among the trees can be caught many fine views of the Liberty Cap, Half Dome, Cloud's Rest, and finally of the High Sierra. Mount Starr King is also very prominent from this trail. Crossing the Illilonette, or South Fork Cañon, you keep on to Glacier Point. About half a mile from the latter is the point from which to get a magnificent view of the Half Dome, though this shows the back or rounded side.

There will still be time for you to get the genial McCauley, who keeps the little hotel, to stand on the projecting rock, suspended, like Mahomet's coffin, between earth and heaven, some 3,200 feet from the former, and have his picture taken; and possibly if early enough in the season also to visit Sentinel Dome, though it would be getting toward night.

You will probably find that the liverymen prefer not to have you take this trip, as it is a hard one on their horses, but there is no difficulty in accomplishing it, and with comparatively little fatigue.

If you do not care to visit Sentinel Dome you can either descend the trail into the valley immediately or stay over night at Glacier Point and take the stage, which leaves there early in the morning and connects with the regular road at Chinquapin Flat. The former method affords many fine views, but the trail though good is steep, and it will be most too late to get any photographs.

Of course there are many other points which I have not mentioned that are worth a shot, but they are far too numerous to be alluded to here.

The Mariposa Grove of Big Trees is about thirty miles from the Valley. As you stay over night at Clark's Wawona Hotel, but seven miles from them, the trip to them is usually made during the afternoon of the day that you leave the Valley, but this means to drive straight along without stopping to take pictures. It is not difficult however to arrange to take a day to it, providing yourself with a lunch before leaving the hotel. For the grove there are no particular hints necessary except to give plenty of time. It is darker than one is apt to imagine. I found on an average view about fifteen seconds on an Eastman's film with *f*-22 stop was about right, though of course there is considerable latitude.

In conclusion I would say that a wide angle lens is indispensable, as the heights with which you have to contend are so great that a viewing lens is, in most instances, of but little more use than to try your temper. Upon my first visit I only possessed the latter, so that I can speak from experience.

I cannot close this rambling sketch without acknowledging the kindness of George Fiske, the local photographer, but for whose kindly advice I should not have found some of the most artistic views in the Valley. He is always ready to help an amateur along, and any such visiting his domain cannot fail to derive benefit from his timely hints.

THE SHORTCOMINGS OF PHOTOGRAPHY IN RELATION TO ART.

[Read before the Photographic Society of Philadelphia.]

BY JOHN BARTLETT.

The ideal, not the literal, rendering of nature is generally accounted the peculiar function of art; but the truth is the ideal of the greatest painters and sculptors is not far removed from the matter-of-fact.

The superb horses of the Elgin marbles are almost *fac-similes* of beautiful living specimens.

Doubtless the gods and heroes approximated human forms, inasmuch as the Greeks had ample opportunity for comparison, denied us by the exigencies of modern life, which compel us to keep our shapes of beauty swathed in thick garments.

The true ideal is not something removed from nature, but the expression of the taste in selection and combination of familiar things; and the closer the artist clings to objective realities, the greater is his work accounted.

Now it is sometimes claimed for photography, by its over-zealous champions, that its intense realism in the translation of the external world is a strong argument in favor of its art status.

To be consistent with the definition of idealism, one might be willing to admit that a subject happily selected by the camera directly from nature would entitle the photographer to the credit due to invention, inasmuch as the mere faculty of inventing a subject does not demand so quick and keen a perception of the beautiful as the discovery in nature of what is just suited to the purposes of art, which escapes the observation of ordinary people.

But one cannot consistently affirm that the pencil of light does faithfully translate nature upon the sensitive film; that is, nature as presented to our normal vision.

If we lay aside the grave charges hitherto brought against photography, of falsifying nature, in the incorrect rendering of color into monochrome, a fault which the orthochromatic processes are fast correcting, still we shall have to admit that in the disposition of light and shade there is a difference between the photograph and the painting, a difference which justifies the painter's method rather than the photographer's.

Let us examine a painting and a photograph of the same subject, a high tower or steeple against a clear bright sky.

In the photograph we shall see that the upper part of the tower or steeple is in much stronger light than the bottom, whilst in the painting or engraving the higher part is darker than the lower.

Now which is correct? Does it not stand to reason that a high tower against a cloudless sky receives greater illumination at the top in the broad expanse of light than at the bottom, just as the photograph renders it?

Does the painter then violate nature to create artistic effect? Surely his method is the more pleasing and picturesque; but how can it be contrary to nature and yet true and beautiful?

One cannot conceive how any such glaring violation of nature can result in artistic pleasure; how a method seemingly so opposed to common sense, and apparently so out of harmony with the actual order of things can be justified; and yet justice must give the verdict for the painter.

Art must represent nature as it is presented to our senses, not as things actually are.

But why does the high tower against a cloudless sky show the upper part dark to our vision? We must have recourse to a physiological reason for an explanation.

There is a peculiarity of the retina which shows itself when we exercise the eye, and which has its influence in works of art. If we place a bright silver coin upon a dark table and center the eye upon it for a few minutes, when we remove the coin for an instant there is a white spot in its place, which almost immediately becomes black.

If a red wafer placed upon a sheet of paper is looked at intently, on removing the wafer the spot will appear green. If we look upon a yellow wafer, on removal it will seem blue, the complementary color always showing itself. This phenomenon is explained by supposing the nerve to be so exhausted by the continued action of the special rays that it momentarily becomes insensible to their influence, and the effect of the rays of an opposite kind only is transmitted to the brain. Let us see now how this sensibility produces an effect where there is, strictly speaking, no color but only light and shade, as in the case of our tower against the sky. We know the highest part of the tower is in the brightest illumination, yet we do not actually so see it. It never so appears to our eye. The reason is obvious; when we look at the steeple or tower, a great part of the retina is opposed to the light of the sky, and on shifting the eye to any particular part, the light which is reflected from that part falls upon the retina where it has been exhausted by the direct light from the sky, and consequently that part appears dark.

A very simple way of convincing one's self of this peculiarity of the retina, is to look intently for a minute at an open window in a room, and then direct your eyes to the wall; the panes will look dark, while the mullions look light.

Painters take advantage of this peculiarity of the eye. They create an effect not only by the contrasts of lights and shades but also by contrasts of colors. The bright carnations, for instance, which in themselves would be glaringly offensive, even painful to the eye, are softened down from their exaggeration by some contiguous colors which catch the eye and affect the retina, let us say tire it first, so that the two impressions together produce a harmonious effect, which seems natural although it actually is not so. If the coloring of a picture be too warm, with subtility of art the painter introduces some color which renders the eye insensible to the red and yellow rays and increases the susceptibility to the blue and violet ones. Every ray of the warm red is actually transmitted to the retina, but the impression being modified by the colder colors a portion of the red is for a moment lost, and the picture appears less warm because the opposite rays have prevailing influence. We never really see all the colors in their actual degree of intensity at the same time when placed together. The eye alternately shifts from one to the other, and there is a modification of all. This is the harmony the painter strives after. It is art, and it is at the same time truth to nature. When we look at a beautiful landscape we do not actually see the colors as they are transmitted by vibrations to the nerve of the eye. No one who desires to enjoy a lovely prospect ever fixes his eye intently upon any individual portion of a scene to the exclusion of all the rest, but the eye wanders over the beautiful prospect and returns as from a delightful excursion. It receives a multitude of varied and modified impressions, and the result is a pleasing picture, just such as the painter depicts upon the canvas, only infinitely more beautiful.

If any argument were needed to show the beneficence of the Creator, this physiological peculiarity, this optical imperfection, might be cited in evidence rather than the eye's perfection as an optical instrument as advanced by the school of Paley. For on it depends our æsthetic pleasure in landscape.

For rendering of form the human eye, guided by the most delicate touch, cannot approach the pencil of light; yet from the tribunal of art, judgment must often be pronounced against photography, and the book of the law is again the limitation of our vision.

Instantaneous photography has yielded marvelous results to science. For the mathematician it has verified the direction of the curve of projectiles. To the physiologist it has revealed the curious muscular contortions assumed during animal locomotion; but instaneousness is generally destructive of art.

Painters do not paint animals in motion in the attitudes Mr. Muybridge has demonstrated to be the actual truth. The painter prefers reality as it presents itself to our visual sense to reality as it is. The law of the persistence of vision must not be violated.

It has been clearly demonstrated that the image impressed upon the retina remains there an appreciable space of time; consequently objects though passing continuously through an unbroken series, seem to the eye to remain unchanged. Instantaneous photography, by isolating any special movement in the series, really destroys the whole idea of motion.

To compel the artist to represent arrested movement, an actual momentary attitude, because he has to do with a single moment of time in his representation, would be about as wise as to force him to confine himself to the use of those colors only which do not harmoniously modify each other when in juxtaposition, though science can readily prove the isolated existence of the three primary colors in their integrity.

Lessing, in his critical essay, "The Laocoon," tells us:

"All appearances of nature which in their actual state are but of an instant duration, which can be what they are but for a moment; all such appearances, be they pleasing or be they horrible, receive through the prolonged existence which art gives them a character so contrary to nature, that at every repeated view we take of them the impression becomes weaker and weaker, till at last we turn from the contemplation in weariness and disgust.

"La Mettrie, who had himself painted and engraved as Democritus, the laughing philosopher, laughs only the first time we look at him. Look at him often, and the philosopher is converted into a buffoon and his laugh into a grimace."

This is the impression conveyed by many an instantaneous photograph, because it represents the person, as it were, petrified in the transient state, fixed forever in a position which could not be preserved for more than a single moment. By its scrupulous adherence to reality it takes away the very appearance of reality, motion, life, action.

The greatest painters have devoted their attention to this simulation of motion in their pictures. Reubens was pre-eminently successful in giving action to his figures.

Fuseli describes the elements of his pictures as "swept along in a gulf of colors, as herbage, trees and shrubs are whirled, tossed and absorbed by an inundation." There is a picture of his representing a rustic wedding, filled with figures dancing, romping and rolling on the ground; a wonderful display of varied attitudes, which creates in the beholder the idea of motion in a masterly manner.

Constantin, in his "Idees Italiennes," has remarked that "the rapidity and suddenness of movement on the part of the mother of the demoniac boy in Raphael's great picture of the Transfiguration, is such that the draperies have not had time to follow the impulse of her body. She alone has turned. Her girdle, left behind by her movement, seems to be placed awry, but we soon perceive that if she were to return to her former attitude it would be in its proper place.

"Raphael always leaves around his figures the space necessary to indicate the position in which they were at the moment immediately preceding that chosen for the painting, and is very careful not to fill up the void which they have thus left behind them."

It is thus that Raphael succeeds in giving a spontaniety of movement to his figures which is truly marvelous.

Instances may likewise be selected from the works of Titian, in which the expression of motion and animation is masterly portrayed. In a small picture representing Christ appearing to Mary in the garden, the Magdalene seems fairly to run forward to meet the Lord, her streaming hair and drapery denoting the utmost rapidity of action, while the hand stretched forth to touch him is suddenly checked at his words "Touch me not."

I have never had the privilege of seeing the originals of the great masters, but even in the engravings and photographs which are accessible, the indescribable charm of motion is not lost.

Michael Angelo is rich in illustration of the power of conveying the idea of motion by suggestion, but we have cited enough examples. Even amongst the minor painters we often find the previous position of the figure indicated by the manner in which the apparel is disposed upon the ground or upon some near object, as a chair. We believe the photographer would do well to imitate the painter if he desires to convey the idea of motion, rather than to seek for action in transient attitude alone. A transient attitude may indeed be depicted but not isolated. There must be other objects associated to carry the mind from one phase to the other, so that it weary not of the perpetual sameness.

How insupportable do those statues of heroes become, upon their solitary pedestals, with arms extended, forever holding the uplifted sword. Yet place the same figure in the same attitude in a painting, marching at the head of a victorious host, with streaming banners, and the mind has something to turn to for relief, and the impression is strong and full of enjoyment.

With what delight have we watched the wonderful play of sunlight upon the waves of the ocean, and how grieved because our cameras gave so tame a rending of their beauty.

What has the sensitive film, with its quick perception, done with those peculiar elongated streaks of ever-shifting light which excite the rapture of the painter; which not only interpret the form of the large masses of water, but also the shape of the tiny waves sculptured upon their surface?

The instantaneous photograph reveals the truth, but the vision of beauty has vanished. "Truth is not beauty" here. In the photograph, in place of the lines of light presented to our vision, we have but rounded dots of the reflected image of the sun, which become elongated by the motion of the waves and are so impressed upon the vision.

Waves breaking upon the beach, for similar reasons, appear different to our eyes from instantaneous photographs of the same. The impression we receive is not of any single wave movement, but the resultant of the rapid presentation of several movements in succession.

The opacity of instantaneous pictures of waterfalls, and the transparency of real ones, is no doubt due to the same physiological cause—the infirmity of our vision.

◆

WHO OWNS THE NEGATIVE?

To the Editors of the Bulletin.

In regard to the important question, To whom does the negative belong? As the readers of the Bulletin are asked for their opinions, I will give you mine. It seems to me that the owner of the studio is the lawful owner of the negative, which he pays for the making of, as well as the pictures that are produced from the negative. If the operator furnished the materials, the plates and necessary chemicals that it takes to make the negative, then the operator is the owner of the negative. I do not think the customer owns the negative unless he makes an agreement with the owner of the studio to that effect, selling the negative and pictures for a specified sum.

Respectfully yours,

A. W. Bulger.

◆

OUR ILLUSTRATION.

There have been but few changes in the general styles of portraiture for the last few years. Any departure from the stereotyped form, we imagine, will be quite acceptable to the photographic fraternity. Mr. Rockwood has furnished us with a suggestion which has been received with great favor by his customers. While Mr. Rockwood has intended it principally for children's pictures, he has found it to be of great interest to adult sitters. Concerning children, such a special interest and fascination attaches to the various moods and expressions exhibited in children's pictures, that all phases of the youthful sitter are of value to parents. Mr. Rockwood, in common with many photographers, has experienced the dilemma which often occurs from his customers being desirous of having copies from various negatives in one dozen pictures. He therefore devised what he has called the "Triplex" portrait, which seems to cover the emergency, and gives three different poses on one cabinet card, virtually securing to his customers three dozen pictures. The size is such as will admit of going upon a cabinet card without any changes other than putting the imprint upon the side of the card instead of on the end. He has generously given this to the fraternity; but, in order to save some trouble in answering correspondents, has had prepared directions for his methods of procedure. He has therefore authorized us to say for him that he will send examples of his pictures for a small price, including instructions, the charge being made to cover expenses, etc. He prefers to send four examples as better illustrating his method of working. The success of the new picture has been absolutely instantaneous, and the Triplex has become a household word. Such of our readers as have an interest in this matter will address Mr. Rockwood, 17 Union Square, New York.

LYNN CAMERA CLUB.

To the Editors of the BULLETIN.

I BEG to inform you that the amateur photographers of Lynn met on Tuesday last, and organized the "Lynn Camera Club," with officers as follows: *President*, W. H. DREW, ESQ.; *Secretary*, O. T. DEWHURST; *Executive Committee*, Messrs. HOYT, BACHELLER and DEWHURST. The club was fortunate enough to secure for rooms an old gallery in the center of the city, which has been refitted up and a dark room 14 feet square added, a very important feature, as you will see. With a present membership of about twenty-five, and something like thirty or forty amateurs in the city whom we have been unable to reach yet, there is every prospect of a successful organization, more especially as the most enthusiastic members are the first business men of the city. As a desire for mutual benefit has drawn the Lynn amateurs together, so they are anxious to receive recognition, advice and assistance from those most experienced in this science, and as such they appeal to you. Yours sincerely, O. T. DEWHURST,

JANUARY 4, 1888. *Secretary Lynn Camera Club.*

[We shall be very much pleased to help the club in any way, and shall give their proceedings full publication if they will but supply us with reports promptly.—EDS.]

THE BULLETIN FOR 1888.

IN looking over the pages of the volume for the past year, we have no cause to feel ashamed of the work we have done; and the character of the material in its pages still remains second to none in the United States. We might make a long list of the names of the contributors; but what important worker in the science and art of photography has not been represented in its pages? Each notable discovery has been faithfully recorded, often in the words of the discoverer himself. Every new process and method of manipulation that had the slightest merit or originality has been presented to the readers of our journal. What better series of papers of lasting value ever appeared in a magazine than those of W. Jerome Harrison on the literature of our art? These pages of our journal will become more and more valuable as the years roll on, and coming generations will be thankful to our Editors for their wise decision to publish them so fully. Another series of articles of eminently practical value are those on Carbon Printing, by Max Bolte. These papers have been copied verbatim in the European journals, thus bearing testimony to their practical value. Papers like these alone are worth a year's subscription to the BULLETIN. They were very expensive to produce, but we are satisfied that they were well appreciated by our subscribers, and we shall continue to furnish such practical papers during the coming year. Again we would call the attention of our readers to our Foreign Correspondence. This still remains superior to the like correspondence of any other American photographic journal, and will continue to be as important a feature of this journal in the future as it has been in the past. Through this correspondence one of the most important of modern photographic inventions has been placed before the readers of the BULLETIN promptly, and as a result has led to an improvement of the invention in American hands that is destined to play a most important part in future instantaneous photography. We refer to the Gädicke and Miethe magnesium mixture for instantaneous photography at night, and its subsequent improvement in the hands of Dr. Piffard.

The end of this important invention is not yet apparent, but great results may be expected of it.

In the matter of reports of Photographic Societies and Associations we have given our readers the fullest details possible without being verbose and filling up our pages with material that has only a local interest. This feature of the Bulletin is a source of considerable expense, but we are always ready to give publicity to any interesting meetings of photographic societies, for these are the life of our art. We should like the Secretaries of the various organizations to feel that the pages of the Bulletin are always open to the reports of proceedings of such societies.

Our Question Column still holds its well-earned reputation amongst both amateur and professional photographers. It is a source of interest and pleasure to our editors, and appears to give great satisfaction to our subscribers.

A glance over the index in the last issue will convince every fair-minded reader that we have accomplished what we set out to do, made the Bulletin the most complete, practical photographic journal in America—a credit to the editors and their able staff of contributors.

Such are some of the good things we have done for the readers of this journal during the past year. In the future we shall do as much and more, for we have a number of improvements in contemplation that will add still more to the value of the Bulletin as a journal for both the professional and amateur photographer. Among other things, we have in hand negotiations, looking to an extension of our European correspondence, from a writer the work of whose pen is as familiar as his practical knowledge of our art is well known.

In the future we shall continue to illustrate the Bulletin in the same elaborate manner that we have followed in the past. This feature of the journal alone is a most valuable one. The pictures we present from time to time are always interesting, either as studies in portraiture or landscape, or as examples of unique processes or methods of a novel character in negative making or photo-mechanical printing. Many valuable suggestions are to be found in these object lessons of our art, and they will continue to be an important part of the functions of the Bulletin as a photographic instructor.

You have our promise for the future; you can see what we have done in the past. Now, readers, we ask you to second our efforts as well in the coming year as you have in the year gone by. Send in your subscriptions early. Remember that the more subscribers we get the better we can make the journal; for we feel their encouragement, and are constantly spurred on to greater and greater improvements in the journal. Help us and we will most certainly help you.

The Publishers.

◆

For Recuperation.—Gentleman (looking for country board)—"How far from City Hall?"

Farmer—"Forty minutes."

Gentleman—"Near station?"

Farmer—"Five minutes."

Gentleman—"Plenty of trains?"

Farmer—"Twenty each way."

Gentleman—"How early can I get New York papers?"

Farmer—"Seven o'clock."

Gentleman—"I'll try it for a week. My system is all run down, and my physician says I must have absolute rest."

WORDS OF CHEER FOR THE NEW YEAR.

I HAVE already taken the BULLETIN three years. It is invaluable to every amateur who, like myself, pursues photography with special reference to its scientific side.

A. L. COLTON,
Astronomical Observatory, Ann Arbor, Mich.

KINDLY renew my subscription to your ever valuable BULLETIN for 1888.

LOUIS L. BLAKE.

THE magazine is always a favorite with us.

A. C. CAMPBELL,
Bridgeport Camera Club.

I DO not wish to continue my subscription to the ——. The BULLETIN is so far ahead of any other publication that I can be perfectly contented with it to the exclusion of all others. I should be at a great loss without the BULLETIN. Please keep my subscription in force until I notify you to the contrary, and send me bill without further orders.

GEORGE S. MIDDLEBROOK.

I FORGOT to send my subscription by last mail and take great pleasure in doing so now. I am more than pleased with the BULLETIN.

H. M. PERKINS, Shanghai, China.

I FIND we cannot get along without the BULLETIN. We want to keep posted or our business is gone.

C. H. SYLVESTER.

I THANK you very much for sending the BULLETIN promptly, for I assure you I often find in its pages something of real value to me in my every-day work, besides keeping me informed of the progress of the art.

JOHN C. GRAY.

INCLOSED find $3 for BULLETIN. You are publishing the best journal I have seen for information.

O. L. YEOMANS.

IT has been very fine this year; and I cannot think of doing without the BULLETIN.

GEORGE N. MOORE.

I WILL just add that the BULLETIN is the best photographic paper published, I have tried nearly all of them, but the BULLETIN is "*'way ahead.*" I could not get along without it.

G. J. STURM.

PLEASE find inclosed P. O. O. for my subscription to the BULLETIN for 1888. I could not think of doing without the BULLETIN.

P. ERSLY.

PLEASE continue to forward the BULLETIN for 1888. I don't see how I am ever going to get along without it any more.

HAROLD SANDS,
Nottingham, England.

INCLOSED find postal note for BULLETIN for 1888. Thanking you for information which I have received through your valuable journal,

Yours respectfully, CHARLES BROCKWAY.

ANTHONY'S
Photographic Bulletin.

EDITED BY

Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by **ARTHUR H. ELLIOTT, Ph.D., F.C.S.,**
and a corps of practical assistants.

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Advertisements should reach us not later than the Saturday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, six, twelve or twenty-four issues.

E. & H. T. ANTHONY & CO., Publishers.

ROCHESTER, N. Y., ACADEMY OF SCIENCE —PHOTOGRAPHIC SECTION.

REGULAR meeting December 20th, *President* CROUGHTON in the chair.

The *President* appointed the following committees:

Committee of Arrangements: Messrs. Mathews, Hagreen, and Croughton.

Reception Committee: Messrs. C. F. Hovey, Guebelle, and Player.

Press Committee: Messrs. Kerrigan, Williams, and Punnett.

Discussions followed regarding the advisability of using tickets at the coming lantern exhibition to be given by the Section.

President CROUGHTON then proceeded to read his paper, entitled "A New Mode of Positive Printing," which he afterwards illustrated by producing some beautiful landscape and portrait opals. This method has some great advantages over the old way. As the picture is printed and developed separate from its ultimate support, it follows that its loss from incorrect exposure or development does not result in the loss of the opal plaque or whatever the intended support may be.

Our first lantern slide exhibition of the season will be given Tuesday, January 3, 1888, at our hall in Reynolds Arcade.

The morning after the dreadful fire and explosions from which the city suffered on the 22d ultimo, the amateur photographers appeared in full force, and pictures were made of the ruins and the break in the naphtha pipe line, which no doubt will prove beneficial to somebody in the lawsuits which will certainly follow.

At the regular meeting of the Section on the evening of January 3d, the many friends of the members who had gathered in the large lecture room of the society were entertained with a lantern exhibition, the first of the season. The slides were arranged so as to show the different modes of making them; and although views of Rochester and vicinity showed up in full force, views of the Orient were not lacking. For the latter we are indebted to Mr. J. E. Dumont and the Society of Amateur Photographers of New York, and hope some time to be able to pay our indebtedness by an exchange of Rochester slides.

President CROUGHTON furnished some fine views of New Orleans, Jeff Davis and family, etc. Messrs. Hovey and Williams also contributed to the instruction and pleasure of the evening. When the entertainment was about one-quarter over, one of the condensers cracked and reflected on the screen like the shadow of a plume on a lady's hat, and tended somewhat to mar the beauty of the following slides. Much credit is due Messrs. Croughton, Mathews and Hagreen as a Committee of Arrangements. Our next lantern exhibition will be given the first Tuesday in April, on which our meeting night comes.

Yours fraternally,
MILTON B. PUNNETT.
Secretary.

◆

BUILT WITH BLOOD MONEY.—Two friends are walking along the street. One of them, pointing to a house, says:

"There's a beautiful place, but it's enough to make a man sad to look at it."

"Why so?"

"On account of its history; for, despite its calm and serene surroundings, it was built upon the groans, tears, wailings and blood of widows, orphans, old men and struggling women."

"You don't say so. Was it built by a railroad monopolist?"

"Oh, no; by a dentist."—*Arkansaw Traveler.*

PHOTOGRAPHERS' ASSOCIATION OF AMERICA—SECRETARY'S REPORT, 1887.

RECEIPTS.

Eastman Dry Plate and Film Co..	$2 50
Treasurer	100 00
Air Brush Manufacturing Co.	26 00
Messrs. Bonte, Chicago	30 00
Brown & Goldsmith	20 00
E. & H. T. Anthony & Co.	155 00
"	2 50
A. J. Anderson	48 25
Acme Burnishing Company	70 00
Gayton A. Douglas & Co.	20 00
Buchanan, Bromley & Co.	30 00
"	2 50
J. W. Bryant	150 00
Collins Manufacturing Company..	48 75
G. Cramer	125 00
J. P. Cheyney	22 50
John Carbutt	2 50
Mr. Dempster	2 50
Theodore Endean	20 00
Benjamin French & Co.	20 00
W. D. Gatchell	20 00
H. H. Hyatt	25 00
Harris Photo Stock Company	20 00
S. G. & R. B. Israel	20 00
Knapp & Caldwell	81 25
H. Lieber & Co.	20 00
Mullett Brothers	22 50
George Murphy	22 50
McIntosh Battery Company	39 00
Mr. Newcomb	25 00
Carroll Ross	20 00
J. Rosenthal & Co.	41 50
Riemer & Katz	2 50
Smith & Harrison	30 00
Sweet, Wallach & Co.	25 00
J. C. Somerville	22 50
Mr. Shepherd	20 00
Stanley Dry Plate Company	60 00
Wilson, Hood & Co.	20 00
O. C. White	20 00
John Young	23 75
Acme Copying Company	35 00
L. W. Seavey	125 00
A. Armburster	20 00
T. M. Starr	20 00
N. C. Thayer & Co.	20 00
Hiram J. Thompson	30 00
Eagle Dry Plate Company	50 00
Allen Brothers	25 00
M. A. Seed Dry Plate Company	127 50
Thomas H. McCollin & Co.	29 25
Eastman Dry Plate and Film Co..	87 50
James W. Queen & Co.	30 00
Smith & Pattison	87 50
Edward Davis	60 00
Scovill Manufacturing Company..	162 50
Blair Camera Company Mr. Prince	196 88
Treasurer	100 00
W. H. Walmsley & Co.	30 00
Sheen & Simpkinson	25 00
	$2,739 63

DISBURSEMENTS.

Postage	$1 00	
Typewriting	2 50	
Postage	1 00	
Stationery	1 25	
Typewriting	1 75	
Postage	80	
Telegram	25	
Postage	1 50	
Telegram	25	
Telegram	40	
Postage	2 00	
Four bolts of cloth	10 14	
Postage	50	
Expressage	3 55	
Tacks	60	
Messenger	25	
Hardware (hammers, tacks, etc.)	3 35	
Cloth	8 00	
Two freight handlers..	4 00	
Watchman (Howard)..	2 00	
Janitor, for towels	1 00	
Sign painting	1 00	
Workmen	4 50	
Workmen	27 00	
Stationery and books for judges	1 25	
Messenger	50	
Workmen	14 50	
Workmen	26 50	
Copying entries	3 00	
Boy, one week	2 00	
Workmen	8 00	
Postage	1 50	
Telegram	30	
Workmen	4 00	
Messenger	50	
Lock for tin box	90	
Workmen	27 50	
Packing register	50	
Expressage	1 50	
Postage	1 00	
Telegram	50	
Minute book (Executive Committee)	1 75	
Envelopes	25	
Expressage	1 50	
Postage	1 00	
"	1 88	
Mailing 150 circulars..	1 50	
Expressage	60	
Telegram	86	
Postage	50	
Expressage	1 70	
Telegrams (two)	50	
Telegram	60	
Typewriting	1 50	
Postage	50	
Telegram	50	
		$187 68
Paid G. M. Carlisle, Treasurer	$1,453 25	
Paid G. M. Carlisle, Treasurer	200 00	
Paid G. M. Carlisle, Treasurer	231 75	
Paid G. M. Carlisle, Treasurer	666 95	
		2,551 95
		$2,739 63

ROCHESTER, N. Y.,
December 22, 1887.

H. S. BELLSMITH,
Secretary.

ST. LOUIS ASSOCIATION OF AMATEUR PHOTOGRAPHERS.

THE regular meeting, held on December 20th, was called to order by *President* BAIN.

The minutes of December 5th were read and approved.

On recommendation of the Membership Committee, Rev. William Johnston, of East St. Louis, was elected an Active Member, and the *Secretary* was directed to notify him thereof.

The application of Mr. R. F. Kilgen for active membership was received, and referred to the Membership Committee for investigation.

There being no further business, the association adjourned until Tuesday, January 3, 1888, at 8 P.M.

After adjournment the lantern slides of the Cincinnati association, made for the interchange, were exhibited, and were greatly enjoyed by the members.

WILLIAM M. BUTLER,
Secretary.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

INFORMAL MEETING, DECEMBER 21, 1887.

Vice-President J. B. GARDNER in the chair.

Some of the most enthusiastic supporters of these monthly informals were in the rooms of the Institute for half an hour or more before the room appointed to meet in was lighted, and it was at this time that the most animated debate took place.

The following quotation was made from the English translation of Vogel's "Progress of Photography" (pages 233-4):

"Ordinary gelatine emulsion and ordinary collodion (solution of pyroxylin) cannot be made to mix in a homogenous manner. If this be attempted, the matters dissolved will separate from the mixture. I have succeeded in uniting both materials in the same liquid by choosing solvents both of gelatine and pyroxylin.

"Pyroxylin dissolves in acetic acid and alcohol. Formula, 31 grains of pyroxylin in a mixture of 770 grains each of alcohol and acetic acid."

The discussion that this quotation provoked was concerning the English translation of the words "acetic acid," and also the measurement of the liquids mentioned, by grains in place of liquid drams and ounces.

It was asserted by one of the contestants "that pyroxylin is not soluble in acetic acid, commonly known and used in this country, and that none of our American photographers are in the habit of weighing liquids."

This was replied to by a member, who said that the acid referred to was glacial acetic acid, and the weight of the liquids had been retained because it was the most accurate way of stating a formula.

The disputants then switched off on the relative merits of the French and English systems of weights and measures, and finally made the compromise that to those educated in the French and German schools the metric system was the most natural and easy; and to American and English scholars, the English system taught for many generations.

When the chairman formally called the meeting to order, Mr. P. Duchochois introduced the subject of the flash light, by stating that he had lately made a number of experiments with different compounds used for this purpose, and the most efficient he had thus far found was:

Gun cotton.........	12 grains.
Magnesium powder..	12 "
Chlorate of potash..	5 "

A discussion now arose respecting the use of gun cotton in the compound, and it was pronounced by some of the disputants as of little or no value in making the light effective photographically. Several different methods of firing the powder were spoken of, and the one most approved was that of Dr. Piffard, which has already been published in the BULLETIN.

Mr. Ehrmann then called attention to a gelatine film transfer lately introduced in the market, suitable for being transferred to opal glass, wood, canvas, or other substances, useful for commercial or æsthetic purposes.

Mr. Duchochois gave in a general way his method of making pyroxylin, and stated that he had always been most successful in his experiments in the use of sulphuric acid and nitrate of potash, and that the keeping properties of the cotton were greatly improved by washing it not only in water, but in a dilute solution of bicarbonate of soda.

The next subject introduced was the manufacture of nitrate of silver, and the question was asked, "Why is it that in mixing the silver of different makers, after being dissolved in water, that entirely different results are often produced, sometimes advantageously and sometimes otherwise?"

The answer given was that all these makers had their pet ways of preparing this salt, and their own secrets as to how they could best introduce it on the market at the least cost.

Mr. Ehrmann called attention to negatives he had ruined by taking them from the hypo-bath before being perfectly fixed, and exposing them to light. He also said he was inclined to believe that both bromide emulsion prints and negatives were less durable than collodion negatives and albumen prints, and that any one who would carefully study the nature of gelatine compounds, as used in photography, would be most likely to come to the same conclusion.

From the remarks of others present it was quite evident that they had arrived at the same conviction, and hence the question naturally presented itself: "How can gelatine plates and paper be treated in order to free them from this objection?"

The answer was reserved for some subsequent meeting, and it was hoped that public attention being thus called to it, this problem would no doubt be satisfactorily solved.

Mr. Mason exhibited a couple of flash light pictures that appeared to win the approbation of all present, and inspire the experimenters in this new feature in photography with the hope and expectation that it might yet be made to permanently advance the present uses and capabilities of the art.

The hour of closing (10 P. M.) having arrived, all further discussion was laid over to the third Wednesday in January, 1888, when it was expected a larger number of experts would be present, who greatly prefer talking photography to talking about it.

THE BROOKLYN CAMERA CLUB.

THE Brooklyn Camera Club was organized at 71 Lincoln Place, on Tuesday evening, January 3d. A very general interest was taken in its organization and the Club is an assured success. A Constitution Committee was appointed by the chairman and the meeting adjourned, subject to the call of the committee.

In addition to the report of the committee, our first election will be held, which will give the meeting more than ordinary interest.

After adjournment of the meeting a number of lantern slides will be exhibited, as well as an interesting collection of prints.

WM. F. MILLER,
Chairman.
H. C. METTLER,
M. E. BAKER,
Committee.

Bibliography.

PRACTICAL ESSAYS ON ART. By John Burnet. Edited and published by Edward L. Wilson, New York.

THIS is a handsome photographic reproduction of one of the most celebrated sets of essays upon art topics that were ever written. They include "Composition," "Light and Shade" and "The Education of the Eye." The essay on composition is illustrated with examples from the great masters of the Italian, Flemish and Dutch schools of painting; as is also that on light and shade. The volume is a handsome small quarto of seventy odd pages, and almost as many full page plates illustrating the principles under discussion. It is invaluable to the artist, and every photographer who cares to makes his pictures with life and feeling in them should study the principles so plainly taught by John Burnet in these essays. The book should be in every studio.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

Q.—C. W. B. writes: If you can find time to give me any information about the amateur exhibition at Boston next spring, I shall be greatly obliged. Or will anything be stated in the BULLETIN to guide an exhibitor?

A.—We have already given notice of such an exhibition, and expect shortly to receive further information. The rules will probably be the same as those of the joint exhibition in New York last spring. See BULLETIN for 1887, page 37, January 22; also BULLETIN December 24, 1887, page 738; also write Mr. Edward F. Wilder, Boston Camera Club, 50 Bromfield street, Boston, Mass.

Q.—A. E. C. writes: Please let me know what fixing and clearing solutions are used with hydroquinone, and if they are the same as with other developers, hypo and alum?

A.—The fixing and clearing baths are the same as those used with pyrogallol.

Q.—J. C. N. writes: What are the general terms or conditions on which a studio is run on shares?

A.—Consult some brother photographer who is working under these conditions. The question is a little out of our line; but some of our readers may answer it.

Q.—J. A. W. writes: Please give us an account in the BULLETIN of the best method of stopping out photographs. We have been troubled lately in stopping so that it will not show in the finished print.

A.—Stopping out photographs is a truly artistic work, and more can be learned from a practical artist than we can give in these columns. In fact it is out of the question to learn this without constant practice.

Q.—E. F. P. writes: I have lately had considerable annoyance with my prints turning a yellowish gray color, which is a loss and very annoying. I use gold chloride and acetate of soda for toning, and hypo for fixing. I am careful with the baths and follow formulas. The discoloration occurs while in the washing bath after fixing. I cannot account for it, and appeal to you for advice.

A.—We cannot tell much about your trouble unless we see the prints. But remember, you must fume your paper thoroughly, print deeply, tone in an alkaline gold bath, and make sure your hypo is good and your wash water of good quality.

Q.—J. M. J. writes: Please tell me through the columns of the BULLETIN which is the better developer for bromide plates, hydroxylamine hydrochlorate or hydroquinone, and which is the more powerful.

A.—Judging from the results obtained by some of the BULLETIN staff, we should say hydroquinone was the best developer; but this may be due to the fact that it can be obtained in a purer state than hydroxylamine. Which is the more powerful we cannot tell unless we make some comparative experiments.

Q.—J. C. A. writes: I am running my waste water through thick blotting paper; will it save the silver? Please answer through BULLETIN.

A.—You will not save the silver in solution unless you precipitate it; then the blotting paper will probably catch it for you.

Views Caught with the Drop Shutter.

THE BLAIR CAMERA COMPANY have issued a very handsome calendar for 1888, a copy of which adorns our office.

THE *British Journal Almanac* for 1888 has reached us in the form of an advance copy. It has its usual freight of good photographic information, and all our readers should secure a copy early.

WE are indebted to the editor for a handsomely bound copy of the volume of the *St. Louis Photographer* for 1887, for which we render our best thanks.

MARSHALL BROTHERS, of Cazenovia, N. Y., send us their "Yule Tide Wish" in the form of a pretty card with snow-scenes upon the petals of a pansy. The idea is an unique one and well carried out. These gentlemen are certainly uncommonly successful with their snow pictures.

SAM C. PARTRIDGE, of San Francisco, sends us a neat little map of California with the compliments of the season. We understand that our friend Partridge will send a copy of this map free to any amateur who contemplates a trip to the Pacific coast. Tendering our thanks to our friend, we return him the wish for a "Happy New Year."

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ANTHONY'S
Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

JANUARY 28, 1888. Vol. XIX.—No. 2.

THE MAGNESIUM FLASH AND ITS DANGER.

THE reckless use of potassium chlorate in the magnesium flash powders has caused the death of one of the citizens of Pennsylvania. It appears that John E. Richardson, of Germantown avenue, Philadelphia, was engaged in the preparation of a mixture containing magnesium, picric acid and potassium chlorate for photographic light, and that while doing so the mass exploded, burning his face and hands and rupturing his left eye. As a result of these injuries he died a few days ago.

For some reason or other the idea has gained favor that if you mix potassium chlorate with picric acid you will eliminate the danger of explosion. This comes from a lamentable ignorance of the commonest chemical properties of the chlorate or a dangerous misrepresentation of facts. We have been most careful, ever since the advent of these flash powders, to warn our readers against the use of potassium chlorate in them; and we have repeatedly condemned its use from a thorough knowledge of what we were talking about and a kindly feeling towards our fellow-men. It is positively cruel to place in the hands of people ignorant of its properties a percussion powder of the worst possible character that the slightest friction will cause an explosion in. And we again unhesitatingly state that any and every powder containing potassium chlorate combined with any easily oxidizable material, as magnesium, is dangerous in every sense of the word.

Furthermore, the presence of any organic substance only aggravates the trouble and facilitates explosion, unless present in quantities that unfit the mixture for its specific purpose, a flashing light. The presence of picric acid in these mixtures, instead of mitigating the danger, only adds thereto; for this particular compound is itself an explosive material, made by treating carbolic acid, or phenol, with nitric acid, and its compounds often explode by friction or percussion. Indeed, some years ago, this very picric acid was proposed as a constituent of a new kind of gunpowder, but the idea was abandoned on account of the fact that the mixture was so readily exploded by friction or percussion. Its use then in these magnesium mixtures is simply an aggravation of the dangers of any mixture containing potassium chlorate.

This latter salt also is not held up as dangerous from any theoretical or ultra-

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scientific scruples that we have, but from a knowledge of quite a number of accidents that have come under our notice in the use of potassium chlorate in medicine. Physicians are in the habit of prescribing tannin and potassium chlorate in certain diseases of the throat, and the druggist is directed to make a mixture of these two substances and dissolve them in water to make a gargle. Now, there are on record several cases where the unfortunate druggist, ignorant of the explosive character of the mixture, has proceeded to rub the tannin and potassium chlorate together in a mortar, and the friction has caused an explosion with disastrous results to the operator and those around him. We never give a lecture upon this particular salt that we do not feel it our duty to caution the student against any mixtures of it with organic bodies; they are invariably explosive under friction or percussion.

After saying all the above, our readers will naturally ask: "What then is to be done, you have been saying so much in favor of this new use of magnesium and the excellent results obtained with it?" The answer to this is, that it is entirely unnecessary to use potassium chlorate in these magnesium flash powders.

Dr. Piffard's method with gun-cotton works excellently, and there are other mixtures of magnesium powder that are just as effective as those containing potassium chlorate. Our publishers have made one of these mixtures without potassium chlorate, and the results obtained are in every way as good as with the chlorate mixture.

When the chlorate mixture was first proposed by Gädicke and Miethe, we at once saw its danger and were very particular to warn the readers of the BULLETIN of the danger of using it without very great care. Having suffered severely ourselves from chemical burns we are well prepared to talk upon this subject, and we have too kindly a feeling for our readers to see them in danger and not say a word of warning.

We do not propose to call back one word that we have said about the utility and beauty of the new magnesium light; but we most earnestly advocate the use of powders that do not contain potassium chlorate. With reasonable caution these other powders can be used safely; but those with the percussion-sensitive chlorate, *never.*

EDITORIAL NOTES.

A NEW method of obtaining the magnesium flash light has recently made its appearance at the North London Photographic Society. This consists in blowing the pure magnesium powder, without any admixture, across two flames of spirit lamps set one behind the other. A bottle containing the powder stands a little behind one of the flames, and through a tightly fitting cork pass two glass tubes, one passing down into the powder, the other going only just through the cork. The tube dipping into the powder passes up through the cork, and then turns over toward the spirit lamp; the second tube serves for the attachment of a rubber ball and tubing to give pneumatic pressure. A sharp squeeze on the ball blows some of the powder up the tube turned toward the spirit lamp and gives a flash of light. The use of two spirit flames is to insure the perfect combustion of the magnesium powder. This method of obtaining the flash light is due to Mr. William Bishop.

THE application of photography to meteorology has often been suggested, and a step in this direction has recently been taken by the Hon. Ralph Abercrombie, who has taken a large number of photographs of clouds in many latitudes, and shown them before the Royal Society. Some of these pictures are published in our contemporary, *Nature*, and hints are given for forecasting the weather from a study of their forms and groupings.

IT is reported that Mr. Thomas Bolas, of the *Photographic News*, has repeated the experiments in obtaining natural colors on silver plates treated with iron perchloride, and has met with some success.

CHAPMAN JONES recommends the following proceeding for eliminating the last traces of sodium hyposulphite from positive proofs. After the proof is fixed as usual, it is washed in three or four changes of water and then in a bath made by dissolving iodine in potassium iodide and diluting with water until it is a pale sherry color. The proof is left in this bath until the back of it has a faint blue tint, which indicates the complete elimination of the hyposulphite. The blue tint of the proof is destroyed by placing in a bath of sulphite of soda mixed with carbonate of soda and very dilute, a few drops of a strong solution in a quart of water. After this a wash in two or three changes of water leaves the proof ready for drying. The operation of treating with iodine solution should be conducted in dishes of porcelain or glass, as those of metal are attacked by the idodine.

WE note that the Executive Committee of the Photographers' Association of America have held the first meeting in connection with the coming convention. This convention is to be held in Minneapolis some time in July next. Our readers will please take notice and begin at once to prepare for the exhibition. A full report of the meeting appears on another page.

A NOVELTY in taking photographs comes to us from Canada. By a system of mirrors moving on hinges, one photograph is made to present four views of the subject—front, back and two sides. The idea is said to be a novel one, and is very likely to become popular with the fair sex. Perhaps somebody did this twenty-five years ago.

AT Washington, D. C., the students of the Columbian College have just organized a Camera Club with eight charter members. A. J. HOUGHTON is *President*, and W. D. SEARLE, *Secretary*. We shall be glad to hear from our friends at any time that they may see fit to send us any reports.

WE are indebted to Mr. W. M. Butler, of the St. Louis Association of Amateur Photographers, for an invitation to their first Lantern-slide Exhibition. We are sorry that time and space prevented our attendance; nevertheless we are grateful for their kind consideration, and tender our good wishes to the association.

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All communications for the columns of the BULLETIN *should reach us by Monday preceding the day of issue, to insure their publication at that time.*

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

The Fate of Inventors—Magnesium Flash Light—News About Color-sensitive Photography—Collodion versus Gelatine—Turmeric for Yellow Glass—Quinine and Alcohol in Color-sensitive Processes—The Action of Light on Common Printing Paper.

If any happy discoverer has opened a new road to reach some interesting land and a great many follow him, very soon the followers try to find out a similar way in the same direction with more or less success. It happens sometimes that the follower is more favored than the original discoverer, or that he is attacked by people who tried to go the discoverer's road ten or more years ago, but returned before they had reached the new land. This is the case with Gädicke and Miethe's invention of the magnesium flash light. Gädicke and Miethe have been the first to make instantaneous views of living people with the magnesium flash light. That others have made explosive magnesium powder mixtures before them, I know. And even more, I myself have tried such mixtures several years ago, but not on living persons, and I was of the firm belief that such mixtures were not suitable for portrait work, noticing that everybody would move during the flash. I could not imagine that under such circumstances a sharp picture could be obtained. Gädicke and Miethe were the first to prove that it can be done. The honor is theirs. Nobody ever spoke about instantaneous magnesium flash portraits previous to Gädicke and Miethe. Now, after they have demonstrated the same, everybody speaks about it. It has also been said that the Gädicke powder is poisonous and dangerous. I can say that it is not poisonous and does not produce any poisonous vapors, and in regard to danger, gun-cotton is decidedly more dangerous than niter or chlorate of potassium. We can send no gun-cotton through the mails, but our postal authorities do not refuse the Gädicke powder.

Of other news, I have to mention here a new color-sensitive collodion process, published at present by Scolik and Mallmann. Dr. Albert has applied that process already for some time for copying oil paintings. Whether this can actually be called progress, to return to collodion, since we are able to make color-sensitive gelatine plates, which are just as sensitive as ordinary dry plates, I leave to the reader. The authors say about it: "Regarding the total sensitiveness of the emulsion, it equals about that of the wet collodion process." And this process, not more sensitive than the old wet collodion process, is published by the authors as a sensitive one. For reproduction photography it may have its advantages, but not for any other purpose.

The authors say further:

"*A.* Dissolve 3.5 grams ammonium bromide in as much water as just necessary, add 40 c.c. hot alcohol and then 40 c.c. of plain 4 per cent. collodion. This solution is left (even during emulsionizing) in hot water.

"*B.* Dissolve 5 grams nitrate of silver in 6.7 c.c. water, add 50 c.c. hot alcohol, and then alcoholic ammonia (absolute alcohol saturated with ammonia-gas) in drops, until the precipitate, which formed in the beginning, has dissolved again. After this, heat the solution and add 40 c.c. plain collodion (a small part of the silver salts separates, while adding the collodion, without any harm).

"*A* and *B* are then mixed by pouring *A* into *B* under good shaking. The result is a coloring emulsion of the finest grain. After emulsionizing, one may test whether there is an excess of bromide or not. The emulsion is left standing for two to three hours, is then precipitated in the well-known manner, dried and dissolved in so much alcohol and ether that, poured upon the plates and held vertically, the flame of a dark room lantern will just be perceptible through the same. Something more definite cannot be said in this regard, the alcohol and ether varying with the quality of the cotton. For the coloring of the emulsion an alcoholic eosin silver solution is applied, which is produced in the following manner:

"One gram eosin (yellow shade) is precipitated with excess of nitrate of silver, washed by decanting, until the water has a deep red color, and then a diluted eosin solution is added to change all the nitrate of silver that may remain into eosin silver, and then it is filtered. While upon the filter it is washed once or twice with water and then several times with alcohol, to remove the water as much as possible. The filtrate will have less color from time to time. The eosin silver is then (upon the filter) dissolved in alcohol, to which is added a little alcoholic ammonia; the filtrate is then poured again upon the filter, until the former becomes of a deep red color. Of this alcoholic eosin silver solution so much is now added to the emulsion, that the latter appears to be of a deep pink color, whereupon it is ready for use. In this form the emulsion continues to ripen and gains in sensitiveness. About the limits of the latter, also the beginning of decomposition, we will have to learn by future experiments. So far, we can say that an emulsion a week old works still brilliantly."

Eight days only! Well, I prefer the old collodion emulsion, which will keep for months. These gentlemen, as seen, make eosin silver, which I was the first, I think, to apply in collodion as well as in the gelatine process.

(Particulars about eosine silver in collodion are published in the *Mittheilungen*, Vol. XXI (1885), page 50; further, in Vogel's "Photography of Colored Objects," under the title: "About the Color-sensitive Collodion Process without Yellow Glass.")

The authors continue:

"It is best to avoid glass plates with bubble flaws; and only those which have been filed around the edges should be taken. The coated plates we have used at once (without drying); about the actual dry plate we will report later.

"As a developer we use the pyro-carbonate of ammonia developer, as prescribed for collodion dry plates:

Carbonate of ammonia (saturated)	20 c.c.
Pyro solution (alcohol 1.10)	2–3 "
Bromide of potassium (1.10)	1–6 drops.

"Three to five drops of potassium bromide solution were sufficient in our experiments to obtain brilliant and clear negatives."

Circular No. 4 contains several puffs. The inventors say, for instance:

"The orthochromatic action of our collodion emulsion is an extraordinary one; we know of no process with similar accomplishment, except that of Baron A. v. Hübl and Dr. E. Albert. A view of the color-table without yellow glass on a dark winter day gave the following color effects: chrome-yellow stronger than ultramarine, chrome-orange equal to ultramarine, chrome-yellow equal to cobalt-blue. By applying a light-yellow glass, vermillion will act stronger than ultramarine."

This sounds all very nice. But I must remark, that I have obtained quite similar results with the wet eosine collodion without yellow glass.

I leave the collodion to the inventors, and shall continue to work with the eosine silver gelatine plates, being at least ten times more sensitive, besides requiring no yellow glass.

With regard to yellow glasses for color-sensitive plates, which are only needed for the copying of oil paintings, I would remark, that turmeric has again been recommended for the production of yellow glasses, partly in Germany, partly in England. It has not the least advantage over aurantia, which is found as a chemically pure compound in the market and is easily soluble in alcohol. Turmeric solution is more troublesome. The root has to be heated in alcohol, decanted, filtered, and even then no such preparation of uniform composition is obtained as an aurantia solution, which is produced by adding 3 decigrams aurantia to 100 c.c. collodion ($1\frac{3}{4}$ per cent.).

About the color-sensitive process wonderful propositions are sometimes read, so that lately even chloral and quinine have been recommended for these plates. Chloral is a very good medium to create sleep, and quinine excellent for fever, but what both drugs have to do with color sensitive plates I am at a loss to explain. The next may probably be some leeches. The authors seem to have worked with some very impure coloring matters and then took to chloral as a remedy for purification. Whether quinine increases the durability of these plates, I cannot tell.

The change of color in paper when exposed to light, commands again lately general attention. Costly books with expensive illustrations, being exposed for weeks to sunlight, changed color and have become unsalable.

Professor Weisner says, that particularly the plain printing papers are subject to turning yellow quickly, and that this change is principally an oxydation process produced by light, the strongly refractive rays being the main cause. Gas-light has for that reason no influence upon these papers, while the electric light endangers them. Late tests of the writer lead to the following results: A plain printing paper, when submitted to a gas flame of 8 normal candles at a distance of 0.75 m. for four months, day and night, turns yellow only so much as can be accomplished in sunlight within two hours. The gases contained in ordinary lighting gas do not as such influence the coloration, even if in presence of large quantities of oxygen.

The gaseous combustible products of the gas flame are, even with the presence of oxygen, not able to produce any yellowing of the paper.

In badly ventilated rooms lit with gaslight unprotected papers may be covered with a brownish layer of soot; but this is true for all qualities of paper, from the finest to the most common kind.

The result is therefore, that gaslight, in well ventilated and properly heated libraries or bookstores, has no injurious influences upon the plain printing paper of books.

"THE sailor hat that folds up is nice for a lady to travel in." A railroad car is probably more roomy and comfortable.—*Norristown Herald.*

DARK ROOM ILLUMINATION EXPERIENCES.

By J. J. Acworth, F.I.C., F.C.S., *London.*

Some time since there was some reference in the Bulletin to the fact that some American workers find that there is a considerable advantage in using a yellow instead of a ruby light for the dark room. I have not myself had much experience with ruby illumination, and that for the reason that if it be the necessary dark room illuminant I would rather give up everything connected with dark room photography. It was some five or six years ago since I began some gelatine emulsion experiments, but the depressant effect of the wretched ruby lantern I used soon caused me to relinquish all such experimental work.

About four years ago canary medium came into the market. I tried it and was delighted with it, though I then very much doubted its being a safe material for the purpose. Its advent, however, enabled me again to commence some photographic research work, and this time with every comfort. During boiling or digesting emulsions I used to write or read my notes and even weigh out with ease. Whilst developing my results it became really quite pleasant work. It took me some time to be quite convinced that there was no danger in using such a flood of light, but as time went on and I managed to get good and clean results, I wondered why it did not at once become the universal dark room illuminant.

I was also somewhat surprised when I visited America last year to find there the different dark rooms, developing and manufacturing, entirely illuminated with weird ruby lanterns. In some cases these were so small as to give scarcely any light at all (I remember one dark room at Niagara where I had to remain from fifteen to twenty minutes before I could see anything in the room), whilst others were far from being safe for the purpose intended; these latter, although giving generally but a poor workable light, consisted for the most part of argand burners fitted with ruby chimneys. As ruby glass is rarely or never perfect, these flaws are a terrible source of danger.

Several years ago, soon after the advent of canary medium, I made the following experiment to test its safety as compared with ruby light. I employed what I considered a proper amount of light to work by in both cases.

I first carefully ascertained at what distance in each case I could read ordinary print. This gave me the data for calculating the relative visual intensities of the two sources of illumination, from which I found the proper distances for placing a sensitive plate before each illuminant in order to find out the amount of photographic action of an equal visual amount of light of the two colors would have on each plate (the two plates now being, of course, exactly of similar sensitiveness). The results obtained were certainly a surprise. From a series of trials I found that about three to four times the amount (visual) of yellow light produced only a similar amount of photographic action on a plate compared with that produced by the standard ruby lantern, whilst the yellow light had the further advantage of rendering the whole room, even to the corners, bright and comfortable for working in.

For my purposes I use two kinds of lanterns, one of which is stationary, the other being portable. The former, suspended right over my working table, is square, with sides about 14 inches. The sides, all except one, and bottom are glazed and then covered with the yellow paper. The light is consequently thrown beautifully over the work, whilst the room also is bright and comfortable. Through the unglazed side the gas pipe enters. This is fitted with a regulator burner not allowing more than two cubic feet per hour to pass, whatever the pressure, and also a by-pass tap so as to reduce that amount when necessary to about half a cubic foot per hour. Of course the top of the lantern is fitted with a removable chimney, the whole being properly trapped to prevent any unfiltered light entering the room.

The portable lamp I recommend is an ordinary kind of lantern, supplied with either candle or oil. I prefer the latter. A convenient size is six inches square and ten inches high, the sides being glazed and then covered with yellow medium. In order to increase the light, I oil one of the paper sides to render it more translucent. This more translucent side can always be turned towards another direction, if the light be considered dangerous for the work in hand. I prefer to burn colza oil for the sake of its safety, but at the same time I add a little petroleum in order to give it more brilliancy.

My concluding remarks refer to orthochromatic photography. I must acknowledge that the use of yellow illumination will require considerable more care in the case of orthochromatic plates, such as those produced by the coloring matters of the so-called eosine series. Even then I still consider a very little yellow light the best illuminant; at least such is my own experience in connection with that work, and it is really astonishing how much light may be used if one just dodges it at critical moments.

THE VALUE OF PYRO IN THE DEVELOPER.

BY DAVID COOPER.

Somebody has remarked that "successful development was largely the result of brains and bromide." This is true so far as it goes, but an unlimited amount of brains and bromide could be of no possible value without a proper proportion of pyro and alkali. The alkali and pyro may succeed occasionally in making very excellent results when no brains whatever are used and little or no bromide. With brains and no bromide, but a proper proportion of pyro and its equivalent quantity of sal soda crystals or any of the other alkalies, perfect success may always be obtained, provided the plate is what it ought to be.

A most ridiculous error has crept into the minds of many otherwise intelligent workers to the effect that pyro is a restrainer. This should be pointed out clearly and distinctly. Pyro is the developer, and is only aided in its action by the alkalinity derived from the salt with which it happens to be combined; if it were not alkaline it would remain quite inactive.

Soda carbonate, or its equivalent in some other salt, is popularly known as the accelerator. Now, there is no objection to this term, as it expresses intelligibly the function exercised, but unfortunately it has led many to believe that, being such, it must of necessity be the most powerful agent in development, and hence by many it has received the post of honor as the developer, while the pyro has unreasonably been put down as the restrainer. This has been due to the fact that acceleration and restraint have seemed to be the only two definite powers possessed by the components of the developer, and therefore it has been determined that if the alkali was the accelerator it must be the powerful developing agent; and by the same reasoning, if pyro was not the developer it couldn't possibly be anything but the restrainer.

It is therefore well to point out that pyro is the developer, and upon the proper proportion used depends the quality of the negative, whether hard or soft, long printing and flat or quick printing and brilliant, and its influence on development in the hands of an expert has only to be seen to be appreciated.

Extreme rapidity is seldom accompanied in the same plate with great vigor easily obtained. A plate in which these two qualities are at the maximum is a production of great value for innumerable reasons, a few the most important of which may be here named. Vigor and strength in a plate present the same advantages that these qualities do in a horse, and when accompanied with extreme speed are doubly valuable. The strength of the cart horse coupled with the speed of the racer are qualities most devoutly desired by stock breeders, but seldom or never found. To be able to obtain strength when desired without effort is a quality that cannot be overrated in a dry plate of great sensitiveness; but unfortunately there are but few commercial plates that possess those twofold advantages, and in the majority of cases a large proportion of pyro and prolonged development are expected to remedy the lack of vigor, and they do to a greater or less extent according to the peculiarities of the plate; most formulas being arranged with this object in view.

This defect has been so common that it is now hardly recognized as such. "The eel has got used to being skinned" and doesn't mind it; but unfortunately, besides being resigned to it, the tendency has been to regard the defect as the proper condition of a good plate, and its absence in a really perfect plate has actually been quoted as an objection.

If the functions of existence could be successfully carried on minus the head, many an individual's personal appearance would perhaps be greatly improved, but it would be a style of beauty that would hardly become popular. For a parallel reason those who are judges will decline to popularize a nearly decapitated dry plate. A plate that lacks the possibility of extreme vigor when desired, while it may not be quite decapitated, is nevertheless sufficiently deformed to be regarded with some degree of disfavor.

We have stated here that the majority of formulas favor the diseased or faulty character of the plate at the expense of the additional amount of pyro used, which would be quite unnecessary in the case of a plate naturally possessed of the requisite density. This is a triumph of scientific development where the formula fulfills the required condition, and it may be noted that pyro here plays the most important part. The use of bromide at the expense of speed, both in timing and development, would no doubt give an approximate result, but this would be a loss or sacrifice of one good quality to supply the lack of another.

If a plate possesses extreme sensitiveness, say, 25 sensitometer, and at the same time you hear the average worker complaining that he objects to his negatives on that brand on account of their being too strong, you may depend on it that he has been using some standard formula which has provided for deficiencies in other plates, and could not see that the plate he was using was not deficient and did not need this aid.

To sum the whole matter up: When you get a batch of plates, satisfy yourself of their character, and if the tendency is to intensity with the ordinary formula, and nothing lacking in speed, reduce your pyro solution one-half in strength without any reduction of the alkali, and you will be delighted to find that you have a batch of plates worth their weight in gold. Leave out all bromide in this case.*

THE LITERATURE OF PHOTOGRAPHY.

BY W. JEROME HARRISON, F.G.S.

In the pages of the Bulletin for 1887 I tried to give a complete list of the English books upon photography. It has been very gratifying to me to learn from several sources that my labors have not been fruitless. Photography is such a "practical" science that its literature has had to encounter so many perils from chemicals, fire and exposure, that it is no wonder the early books and periodicals are now very scarce. They were bought for use, and most of them were fairly worn out.

It would serve no useful purpose to tell of the libraries I have visited, the miles I have traveled, or the hours I have spent over this fresh installment of my work. The task has been heavy, but I trust its accomplishment will lighten the labors of the workers at photography in the future.

We now come to "Class II, Periodicals," and I must confess they have given me more trouble than the books, though not so many in number. Magazines, journals, etc., have mysterious ways of being born, and of dying and then coming to life again, which is perplexing. Then the fancy seizes the editors to change the titles of their bantlings, and to amalgamate with other journals; or perhaps to undergo fission, and continue as two instead of one; or to reprint the weekly or monthly issues under another title, and style it an annual. Then the dead periodicals—it would be an easier task to trace the genealogy of any given "John Smith" than to ascertain the precise date of demise of a forgotten periodical, whose circulation grew gradually less and less, until it died of inanition. And then the details—who were the editors of this, that, and the other paper, and when did their respective reigns begin and end; the sizes—octavo, quarto, or what not, only to be ascertained by personal inspection; and the price. And there is the playful habit of some publishers of renumbering the volumes of a series, beginning a new series every ten years, say. I scarcely think penal servitude would be too severe a punishment for them! Let any man who has tried to hunt up an old paper in the *Philosophical Magazine*, for example, or in *Notes and Queries*, knowing only the number of the volume, say if he does not agree with me.

The mark || following a date indicates that publication was then discontinued; + means continued. The periodicals are arranged in alphabetical order; and each has a number attached to it for convenience of reference.

Class II: British and Colonial Periodicals relating to Photography.

(1.) Academy (The). A record of literature, learning, science and art. Monthly, 1869–71; fortnightly to 1874; weekly to 1888. 4to. London. Price, 3d.

The *Academy* is a well-written weekly, but the portion of it allotted to "science" is very small. It has been edited successively by C. W. Appleton, C. E. Doble and J. S. Cotton.

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* The better class of plates, such as Stanley's, possess the properties most to be desired, great sensitiveness combined with the possibility of extreme vigor.

(2.) ALPINE JOURNAL (THE). A record of mountain adventure and scientific observations, by members of the Alpine Club. Edited by H. B. George. 1864 to 1888.+ 8vo. Quarterly. February, May, August, November. Price, 1s. 6d. each. Vol. XIII, for 1887, edited by W. A. B. Coolidge. Longmans, Green & Co., Paternoster Row.

The *Alpine Journal* has included many notices and references to photography as pursued under the special difficulties which it is the delight of mountaineers to meet and to overcome. Captain Abney is well known as an active member of the Alpine Club, and it includes in its ranks many other good photographers.

(3.) AMATEUR PHOTOGRAPHER (THE). A popular journal devoted to the interests of photography and kindred arts and sciences. Weekly. 4to. Scientific Publishing Co., 22 Buckingham street, Adelphi. Price 2d. No. 1 was issued Friday, October 10, 1884.

Vol. I, to April 3, 1885, pp. iv and 432. Vol. II, to end of 1885, pp. xii and 644. Vol. III, January to June, 1886, pp. viii and 312, with extra No. for April 30th. "Home Portraiture." 1s. Vol. IV, July to December, 1886, pp. viii and 324, and extra Nos. September 10th and December 10th. 1s. each. Vol. V, January to June, 1887, pp. viii and 316, extra (Jubilee) No. June 21st. Vol. VI, July to December, 1887, pp. viii and 328, and extra No. ("Home Portraiture") for October 7, 1887.

We believe that Messrs. J. Harris Stone and C. W. Hastings have conducted the A. P. from its commencement. The present editor is Mr. Hastings.

(4.) AMATEUR WORK ILLUSTRATED. A practical magazine of constructive and decorative art and manual labor. 4to. Edited by the author of "Every Man His Own Mechanic." 1881–88. Monthly. Price 6d. Ward, Lock & Co., Salisbury square.

About 48 pp. in each number, with folding plans, etc. Several useful articles on the manufacture of photographic apparatus by C. C. Vevers, J. H. Richardson and others, have appeared in the later numbers of this useful magazine.

(5.) ANALYST (THE). A Monthly Journal of Science, Literature and the Fine Arts. 8vo. Vols. I and II. London and Worcester, 1834–35.

Continued as

(5 *a.*) ANALYST (THE). A Quarterly Journal of Science, etc. Vol. VI. Edited by W. Holl and N. Wood; Vol. VII, by W. Holl, E. Mammatt and N. Wood; Vols. VIII–X, by E. Mammatt. London and Birmingham, 1835–40. 8vo.

(7.) ART UNION (THE). A Monthly Journal of Fine Arts, 1839–48. Ten vols. Royal 4to. 10s. 6d. to 21s. per vol. Published by Chapman & Hall. No. 1 was published February 15, 1839, price 8d.

Continued as

(7 *a.*) ART JOURNAL (THE); 1849–84. Monthly; price half-a-crown, or 31s. 6d. per vol.

Continued as

(7 *b.*) ART JOURNAL (THE). New Series, 1885–88. Folio. Monthly. Price 18d. J. S. Virtue & Co., 26 Ivy Lane, Paternoster Row. Each number contains 32 pp. of letterpress and one plate.

The beautiful plates and illustrations of the *Art Journal* have always rendered it worthy of study by photographers, but many papers upon photography and photographers have appeared in its columns, most of which were written by Robert Hunt.

(8.) ARTS (JOURNAL OF THE SOCIETY OF). 8vo. Weekly; price 6d. 1852–1888. Bell & Sons, York street, Covent Garden.

The principal feature of this periodical is that it contains, verbatim, the lectures delivered before the Society, in the excellent rooms in John street, Adelphi. Captain Abney, Messrs. Bolas, W. K. Burton and other well-known photographers have lectured there, and more than one exhibition of photographs and apparatus has been held. In the present secretary (Mr. H. T. Wood) the Society is fortunate in possessing a gentleman whose knowledge of photography is not less than that possessed by his eminent predecessor, Mr. Le Neve Foster.

(6.) ANNALS OF CHYMISTRY AND PRACTICAL PHARMACY (THE). Being a weekly summary of the discoveries of philosophers, chiefly continental and transatlantic, in their applications to the Chemistry of Medicine, Agriculture, Manufactures, and to the several branches of Physics, Electricity, Galvanism, Photography, etc. One vol. only published. 8vo. London, 1843.

(9.) ASTRONOMICAL (ROYAL) SOCIETY. Monthly Notices of the. Containing Papers, Abstracts of Papers and Reports of the Proceedings of the Society. 8vo. Price (to subscribers) 10s. per annum. Post free from W. H. Wesley, Burlington House, London, W.

Vol. XLVII (for 1887) includes nearly 600 pp. and contains eight papers by Professor Pritchard, Dr. Dwyer and Messrs. Grubl and Roberts, on Stella Photography.

(10.) ATHENÆUM (THE). Journal of English and Foreign Literature, Science and the Fine Arts. (Music and the Drama) 4to. 1828–1888. London, 22 Toork's Court, Cursiter street, Chancery Lane, E. C ; price 3d.

In the early days of photography—1839 to 1850 or thereabouts—the "Athenæum" published many articles and notes on photography; being, in fact, quite a recognized medium of communication for photographers.

(11.) AUTOTYPE NOTES. This is a little periodical (published quarterly or thereabouts, we believe) issued by the Autotype Company, of 74 New Oxford street, W. C., gratis, for private circulation among their customers. It first appeared in the year 1877, and has contained information on the subject of carbon printing.

(12.) BAZAAR (THE). EXCHANGE AND MART: and Journal of the Household. 4to. Tri-weekly (Monday, Wednesday, Friday), price 2d. Office, 170 Strand, W. C., 1868–88.

The Bazaar has contained several serial articles on photography, of which we may name specially those by O. E. Wheeler, which have been republished in book form. It usually also contains numerous advertisements of photographic apparatus for sale and wanted. Vol. XXXVII is now in course of publication.

(13.) BENGAL (JOURNAL OF THE PHOTOGRAPHIC SOCIETY OF). 8vo. 1857 to (1870?): Calcutta. Nos. 2 and 3 are in the British Museum Library; and there is a reference to it in the *Photographic News* for 1865, p. 470.

PREPARING PHOTOGRAPHS FOR EXHIBITION.

By Robert S. Redfield, *Secretary of the Photographic Society of Philadelphia.*

[Read before the Photographic Society of Philadelphia].

The special interest taken by American photographers in the approaching Annual Exhibition has induced me to offer a few suggestions regarding the preparation of exhibits.

A most desirable requisite in exhibition pictures is that they should interest those to whom they are shown. This result may be attained by their artistic and technical excellence, but it will be well if the subject be one to attract and interest. Many excellent photographs are interesting only to those who made them, and would offer no special attraction to the public generally. Such pictures as the ordinary run of country residences, family groups and most portrait subjects, do not add to the attraction of an exhibition. Architectural subjects should be artistically beautiful in themselves, or historically interesting, and of course must excel in technique. There is no excuse for absence of the latter quality in subjects which cannot move if they try. Portraits as a rule do not attract, from their monotony and want of what artists would call motive. In this branch of the art, however, if a fine model be selected, a beautiful woman or child or the head of a handsome old man, there is scope for great skill in posing, lighting, and chemical manipulation.

Many landscapes fail to interest from lack of proper introduction of figures which tell some story or convey an idea in keeping with the surroundings. If the subject is some grand scene in nature telling its own story, man had better be excluded from the view as unnecessary and probably belittleing. If a figure is introduced in connection with a waterfall, or where it is desirable to convey a proper idea of height in rocks, etc., it is of the greatest importance that it be appropriately picturesque in dress, occupation and pose.

Much has been written lately in favor of platinotype and bromide paper prints for exhibition purposes, as being more artistic in tone and effect. This is probably true of the best work by these processes; but if not the best of the kind, the exhibitor had better confine himself to silver prints. From my observation, only negatives of just the proper quality will make presentable bromide or platinum prints. True artistic excellence does not depend so much on the process as on the manner in which it is used and its adaptation to a subject artistic in itself. Much of the beauty of photographic work consists in its mechanical perfection, the result of proper manipulation of lens and camera, and perfect understanding of the chemical action of the developer. I fail to see why this beauty of finish and detail is at all incompatible with the highest artistic excellence. Many so-called artistic effects in photographs are the result of accident, if not carelessness on the part of the operator, whose first aim should be to learn the proper use of his tools. Such effects are only creditable when, in addition to any beauty they may have, they are intentionally produced by means of a thorough understanding of the capabilities of one's apparatus.

Presuming that most of us will exhibit our work in the form of silver prints, and having selected appropriate subjects, the choice of the special prints for the purpose should be made from several copies after mounting. It should be borne in mind that the slight greenish tint of the glass darkens the print somewhat in framing, hence rather light prints should be chosen. This darkening effect of the glass is aggravated by the fact that most photographs being comparatively small, in a large gallery they cannot well be seen without close inspection, and hence seem darker than in reality. Careful examination in good light is necessary to reveal their true beauty. It is hardly necessary to advise exhibiting in large sizes, full plate pictures really being about the smallest which will do themselves justice. The matter of size is a strong argument for enlargements, but if possible make them yourself, and have the credit of showing work entirely your own.

To go back to silver prints, it is a well ascertained fact that a print very thoroughly washed before toning will weaken less in the fixing bath than one hurriedly washed. Certain toning baths also produce less change in depth of color, and hence it is advisable to choose a bath with this in view, so as to readily produce at will prints of proper depth for appearing well when framed.

For ordinary purposes, I think no mount is so suitable for photographs as the white card with an "India tint" margin around the photograph. The creamy color of the tint strengthens by contrast the high lights in the picture, and at the same time has an enriching effect on the general tone. On the walls of an exhibition gallery, however, the excess of white is not agreeable, and a warmer, softer tone is desirable, either in the mount itself or the mat surrounding the photograph. Gray is generally recommended for this purpose. It should not however be a cold or bluish gray. This tone kills that of the photograph unless it be one of a very red tone. A warm or brownish gray is the proper tint, and will heighten the pleasing effects of a properly toned silver print. A good method is to mount the picture on one of the regular India tint mounts, and frame it with a mat of appropriate tone and with wider margin than the card usually allows. For a 6½ x 8½ print about an inch of the India tint should show, the mat being, say, 14 x 17 inches.

Bromide or platinum prints being in pure black and white, do not need any complimentary tint in the mat to set them off. A gray mount brings out the high lights more effectively perhaps, but my choice for such prints is a white mat or mount, mats of white drawing paper being particularly suited for the purpose.

Wide margins accomplish two ends. The most important is the separation of the picture from others in the neighborhood, so that the eye is not attracted away, and the picture's full beauty is more apparent. This, too, is a good reason for framing pictures singly and not grouped together in one large frame. A wide margin will, in the second place, if not excessive, often make a picture appear of larger size than it really is. This fact may encourage some of us to make of secondary consideration the natural desire to show pictures the full size of the plate used. Most photographs would be improved by trimming off some portion of their edges. Unless very carefully composed in the camera, more is included at side, top or bottom, than should be. The proportion of 5 to 7, I believe, is considered by artists as the most suitable for general purposes. By cutting an opening 5 x 7 in a large card and placing it over a 6½ x 8½ print, it will often be found that a more effective composition can be produced by trimming down to the smaller size, and it can also be determined just where and how much trimming should be done. A picture thus trimmed will do the exhibitor more credit than one in which the fact that he owns a large "box" is more apparent than his judgment in composing his picture.

Having trimmed the print to the proportions most in harmony with the subject and selected the color and materials for the mat, there is a relative proportion between the print and the frame which should be observed. It is often assumed that the margin should be equal all around the picture, and pictures are commonly so framed by leading dealers who ought to know better. I have recently seen two valuable pictures positively spoiled in effect from this manner of framing.

To maintain a proper proportion in the frame as well as in the picture, the margins should be wider in the direction of the length of the picture. I cannot give a rule for determining this proportion, but for a 5 x 7 print, an 11 x 14 mat and frame will be found about right. The margin at the bottom of the picture should be slightly in excess of that at top. Engravings will generally be found to be printed on paper cut according to these rules.

As to the use of a gilt edge to the mat, it depends upon the subject. A figure picture of bold, striking character is probably rendered more effective by the slight line of gold. A landscape, or subject full of fine detail, would be better with a plain beveled edge mat, with nothing to attract attention from the beauty of the picture itself.

This point of concentrating attention on the picture should have most careful consideration. In a large room full of pictures, slightly greater elaboration in framing is allowable than in one's own parlor, but nothing is so destructive to the best effect in a picture, and particularly in a photograph, than anything in the framing which attracts attention to itself. The frame should be neat and appropriate but nothing more. Narrow moldings of oak or other natural woods are most suitable. The addition of a narrow bronze beading has an enriching effect, and if not too elaborate is tasteful and appropriate. Whatever there may be in the way of ornament on the frame should not be allowed to project higher than the molding proper, or it will be liable to injury in transportation and handling. This is an argument for simple framing of exhibition pictures. The annoyance of having frames injured is greatly mitigated if they are inexpensive ones.

Screw-eyes and cords, or wires for hanging, need not be sent with pictures for exhibition. They interfere with compact arrangement in boxing, and generally are not placed as they should be for this special purpose. Hanging committees should place a single strong screw-eye at the middle and back of upper side of the frame, and hang each picture by this eye on a hook driven in the wall. This will avoid all liability of injuring frames in hanging.

It has been justly said that the proper mounting and framing of an exhibition picture is "half the battle." This should stimulate us to study the subject so as not to be at the mercy of the frame maker, who is apt to consider the question of profit to himself more than doing full justice to the picture consigned to his care. Of perhaps equal importance with proper framing, is the naming of the picture. A good picture with a happily chosen title will appear doubly good for this reason alone. The name expresses the idea conveyed by the picture, and the excellence of each is a help to the other. The idea, if not the exact name, should be clear in one's mind at the time of composing the picture, but just here should be remembered the saying in regard to "art concealing art." Nothing so spoils a figure composition as anything which gives evidence of its having been "made up" for the occasion. A painter, in addition to the care given to the pose and expression of his figures, would carefully select the costumes and accessories to be in perfect harmony with the subject. The camera copies all detail so faithfully that it is even more important that every object in the field of view should be perfectly in keeping with the idea of the composition. I have frequently seen this fault in photographs otherwise most excellent, and even in some which have been awarded prizes. A little more care would have made them perfect, so that they would have deserved in every way the distinction conferred upon them for their excellence in most particulars.

PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

MEETING OF EXECUTIVE COMMITTEE, ST. LOUIS, MO., JANUARY, 1888.

IN pursuance to a call from the President, the Executive Committee of the P. A. of A. assembled at Southern Hotel, St. Louis, Mo., January 11th, at 10 A.M., *President* DECKER in the chair.

Upon roll call there were present:

E. DECKER, *President*, Cleveland, Ohio; W. H. POTTER, *Secretary*, Indianapolis, Ind.; G. M. CARLISLE, *Treasurer*, Providence, R. I.; C. W. MOTES, *1st Vice-President*, Atlanta, Ga.; F. W. GUERIN, *2d Vice-President*, St. Louis, Mo.

Also officers of 1887, as follows:

G. CRAMER, *President*, 1887; JAMES LANDY, *President*, 1885; C. GENTILÉ, Editor of the *Eye*, Chicago, Ill.; W. H. H. CLARK, of the *St. Louis Photographer*.

Mr. DECKER, upon taking the chair, said the first business in order was the reading of the Secretary's report; the same was read and referred to the following Auditing Committee: C. W. Motes and F. W. Guerin.

Then followed the reading of the Treasurer's report, which was referred to the same Auditing Committee. In the Secretary's report was found a reference to Mr. Entrekin, of Philadelphia, who had declined to pay for space at Chicago, giving as a reason, the same had been marred by the erection of a booth thereon. The Executive Committee found upon investigation that Mr. Entrekin had ground for complaint, and decided by vote to rest the matter there. Mr. Bellsmith was continued upon the Committee on Publication of Constitution and By-Laws, and matters connected therewith, until collections for advertisements shall be completed and a full report shall be made.

A motion was made to change the location of our next Convention from Minneapolis to Detroit. The motion was unanimously negatived.

In order to encourage a large attendance at our next Convention Mr. Cramer offered a prize of one hundred dollars cash, to be allotted as follows: Numbers beginning with one, and corresponding with numbers upon the receipts for dues, shall be placed in a box, and the first number drawn therefrom shall win the prize; provided, however, that the holder thereof shall be in attendance. If the holder of the lucky number shall not have attended the Convention, another drawing shall be had, and so on, until a receipt shall be personally produced, corresponding with the number drawn.

The drawing shall take place at the close of the second day's session.

Mr. MOTES moved that we accept Mr. Cramer's liberal offer with thanks. Carried unanimously.

The Auditing Committee reported as follows:

"Mr. *President*—We, the Auditing Committee, have the honor to report that we have examined the books of the Secretary and of the Treasurer, and find they are correct, and we heartily commend said officers for the commendable manner in which they have discharged their duties, and the excellent condition of their books.

C. W. Motes,
F. W. Guerin,
Committee."

The Report of the Local Secretary, C. Gentilé, was read, whereupon it was ordered that the Local Secretary be paid the balance in his favor of $44.39. The bill of $31.21, presented by E. & H. T. Anthony & Co. for expenses on account of the foreign exhibits, is approved and ordered paid.

President Decker, considering the number of officers in the immediate neighborhood of St. Louis, and the saving of time and expense, called the Executive Committee in session here, with the expectation of sending a committee of two, later on, to Minneapolis to make the necessary arrangements.

On motion, it was ordered that Mr. G. M. Carlisle and W. H. Potter go, as soon as possible and convenient, to Minneapolis, select the halls and make all arrangements for holding the next Convention some time in July, 1888.

The *Secretary* is made a Committee on Railroads.

Committee on Stationery—The Secretary and Treasurer.

On Foreign Exhibits—B. French & Co.; E. & H. T. Anthony & Co.; G. Gennert.

On Progress of Photography—W. H. H. Clark.

On Stenographer—G. M. Carlisle.

PROGRAMME.

First Day.

Address of Welcome.
Response by President.
Calling the meeting to order.
Roll-call.
Reading minutes of last meeting.
Report of Standing and Special Committees.
Selection of location.
Appointment of Committee on Nominations.
Committee on Awards.
President's report.

Second Day.

Reading of communications.
Unfinished business.
Report of Committee on Nominations.
Appointment of tellers and announcement of mode of election of officers.
Report of Special Committees.
New business.
Papers—discussions.
Papers—discussions.

Third Day.

Reading of communications.
Unfinished business.

New business.
Papers—discussions.
Papers—discussions.
Election of officers.

Fourth Day.

Reading of communications.
Report of committees.
Unfinished business.
New business.
Papers—discussions.
Announcing the Awards.
Closing ceremonies.

PRIZE MATTERS.

Exhibits.

Each exhibitor is limited to six pictures in any one class.

All entries must be made on or before the day previous to the opening of the Convention; application by mail should be considered an entry.

Resolved, That the Executive Committee shall appoint one judge, the competing exhibitors one, and these two the third judge, and these judges shall award the association prizes. The names of the competing exhibitors' choice shall be handed to the Secretary before the close of the first session; otherwise the Executive Committee shall appoint all the judges.

Prizes for Exhibits by members of the association residing in the United States and Canada.

CLASS A.—Portrait Photography.
  Any size not less than 13 inches in length.
  One gold, one silver, and one bronze medal.
CLASS B.—Genre Pictures.
  Not less than 13 inches in length.
  One gold, one silver, and one bronze medal.
CLASS C.—Portrait Photography.
  All sizes less than 13 inches in length, larger than cabinets.
  One gold, one silver, and one bronze medal.
CLASS D.—Cabinets.
  One silver and one bronze medal.
CLASS E.—Landscape Photography.
  One gold, one silver, and one bronze medal.
CLASS F.—Marine Views.
  One silver and one bronze medal.
CLASS G.—Interiors.
  One silver and one bronze medal.
CLASS H.—Architectural Photography.
  One silver and one bronze medal.
CLASS I.—Transparencies.
  One silver and one bronze medal.
CLASS K.—Photography applied to Science.
  One silver and one bronze medal.
CLASS L.—Plain Enlargements.

One gold, one silver, and one bronze medal.

Two silver medals shall be provided to be awarded by the Executive Committee for such improvements, inventions or discoveries as shall be deemed worthy of such recognition.

For Foreign Exhibits.

For best Exhibit of Portrait Photography.—One gold and one silver medal.

For best Exhibit of Landscape or Marine Veiws.—One silver and one bronze medal.

The *Secretary* shall furnish each member of the Awarding Committee a list of all competing entries certified by the Treasurer, that all such competitors are members of the Photographers' Association of America and not in arrears for dues.

The *Secretary* shall also furnish each of the judges a schedule of prizes to be awarded and the necessary instructions as ordered by the Executive Committee as follows:

INSTRUCTIONS TO JUDGES.

Each judge shall separately make his examination of the competing exhibits and decide upon the merits of the same, giving in each class Number 20 as the best, Number 19 to the second best, and sc on, according to the number of medals offered.

The Awarding Committee shall have a Special Meeting before the Friday Morning Session, combine reports and come to a final conclusion by striking an average, and awards shall be made accordingly.

THE BLAIR CUP.

Subject for Competition—Hiawatha.

One picture only by each competitor shall be allowed to enter for this prize.

First.—No picture having ever previously entered for competition shall be allowed to compete for this cup.

Second.—Nothing of an advertising nature shall be permitted with said competition.

Third.—The award shall be made for the most meritorious photograph illustrating the subject, Hiawatha.

The winner of the cup shall sign an agreement to take and hold the cup subject to all the rules and conditions made by the donor thereof, and the Executive Officers of the Association.

RULES TO BE OBSERVED BY COMPETITORS FOR ASSOCIATION PRIZES.

First.—All competing exhibits must be from negatives made since the Chicago Convention, August, 1887.

Second.—Any person desiring to compete for prizes, must remit dues to G. M. CARLISLE, *Treasurer*, Providence, R. I., on or before making entries.

Member's annual dues, two dollars.

New member's initiation fees and dues, five dollars.

The *Treasurer* shall furnish the necessary blanks for entries, which must be filled and forwarded to W. H. POTTER, *Secretary*, Indianapolis, Ind., all entries to be in the hands of the Secretary the day previous to the opening of the Convention.

No exhibit shall be received unless the freight or express charges shall have been paid by the owner.

Resolved, That the exhibition of photographs connected with our Convention shall be considered an art exhibition pure and simple, and in order not to detract from this standard, be it

Resolved, That no sign of any description shall be allowed in the halls devoted to the display of photographs, except one card to every exhibit, said card not to exceed 20 inches in length, and to contain only the name and address of photographer whose work it represents.

Resolved, That any picture may have its title, or subject, neatly inscribed thereon, but nothing of an advertising nature shall be permitted. Each picture shall be marked with a letter signifying the class in which it competes, and duplicates of said picture shall be excluded from any other class.

All exhibits must remain on exhibition until the close of the Convention.

Resolved, That Vice-President F. W. Guerin, shall have charge of the art department, and shall be charged with the duty of removing all objectionable features, and see to the enforcement of these rules.

Resolved, That a certificate shall accompany each award.

Committee on Medals and Certifications—F. W. Guerin, E. Decker, James Landy.

MERCHANTS' DEPARTMENT.

Proper arrangements shall be made for the merchants. The price for space will be hereafter announced. No merchant shall be permitted to transact business in the stock department without securing space for that purpose.

Treasurer CARLISLE—Mr. *President :* There has been for some years a desire on the part of many members of the Photographers' Association of America that an insurance feature shall be added to our association. In pursuance with this desire, which has grown almost into a demand, I move you, sir, that this Executive Committee immediately take under consideration the most feasible plan by which a specific amount shall be paid to the family of a deceased member, and that a committee upon this subject shall be appointed at this time.

Seconded, and unanimously carried.

The following committee was appointed by the Chair to formulate a plan of life insurance and report to the Minneapolis Convention: G. M. Carlisle, C. W. Motes, W. H. Potter.

Mr. Landy requested to be relieved from the Committee on Medals. The resignation was accepted, and Mr. Motes appointed to fill the vacancy.

It was moved and carried that the Treasurer's bond shall be fixed at two thousand dollars.

The *President* is authorized to appoint a practical photographer as delegate to the International Congress, to be held in Brussels, Belgium, in 1888, without expense to the association.

A cordial invitation is hereby extended to all foreigners connected in any way with photography to attend our Ninth Annual Convention at Minneapolis.

W. H. POTTER,
Secretary, Executive Committee.

In order that parties interested shall have full information as to all rules and regulations in connection with the Blair Cup, the following is subjoined, as adopted at the Chicago Convention, 1887:

"It was then moved and seconded that the following rules and conditions be adopted to govern the competitions for the Blair Cup.

First.—No picture having been previously entered in competition shall be allowed to compete for this cup.

Second.—Nothing of an advertising nature shall be permitted to be used in these competitions.

Third.—The award shall be made by a committee of three, to be appointed by the Executive Committee.

Fourth.—The Executive Committee shall select a subject each year to be illustrated, and that no other picture shall be elegible.

Fifth.—The award shall be made for the most meritorious photograph illustrating the subject selected the year previous.

Sixth.—The winner shall be custodion of the cup until the next Convention.

Seventh.—It shall be necessary for the cup to be won twice by the same person before it becomes his property.

Eighth.—In the event of the cup not being won twice by the same person, after having been competed for three times, it shall become the property of the association, to be disposed of as the Executive Committee shall determine.

Ninth.—Sections four and five of these rules shall not apply to the first competition, 1887, for the cup.

Carried unanimously.
August 7, 1887.

G. CRAMER, *President.*
H. S. BELLSMITH, *Secretary.*

OBITUARY.

MARVIN E. BECKWITH.

THIS well-known photographer, of Cleveland, passed away on December 13th at his late residence in that city. At the early age of sixteen years he took Horace Greeley's advice and went West in search of fortune, arriving in the city where he died about fifty years ago. After trying several branches of business, and also taking part in the running of a newspaper, he finally, in 1855, began making daguerreotypes under the instruction of Mr. Samuel Crobaugh. From that time to the present he has followed the art we love with faithfulness and perseverance, and has acquired a name of honor among the fraternity. After practicing the art for many years, he finally took his son, Mr. Alva D. Beckwith, into partnership with him, in the year 1870, and M. E. Beckwith & Son has long been known as a prosperous firm in Cleveland. Mr. Beckwith was a prominent member of the Methodist Church, a Sunday-school teacher, and a member of the choir of the church which he attended. While singing in the choir he met Miss Margaret McLeod, the daughter of the late General McLeod, and an attachment arose which resulted in marriage in January, 1845. For forty years nothing marred the life of the loving couple, until death called away a fond husband and an indulgent father. The deceased was a sufferer from cancer many months before his death, yet he bore the affliction calmly and patiently. He leaves one son and a married daughter, who with his loving wife mourn his loss. He was a prominent Odd Fellow, having been a member of that order for over twenty-five years. He was born in Erie County, N. Y., November 24, 1823, and went to Cleveland, December 16, 1839.

What better tribute can we pay to his memory than to quote the words of those who knew him best. His fellow citizens say of him: "He was a good man. He was a beloved husband and father, and a true friend. Everybody who knew Mr. Beckwith loved and respected him. His entire life was without a blemish. He lived as though always mindful that the all-seeing eye was upon him. He was truthful, kind and sincere, not because the great invisible Guide led him in that path, but because it was his nature to be so. The world is better because he lived in it. He has left footprints on the sands of time, and was a noble man because he was good and true, and faithful in all things; but many of the good deeds he did will never be generally known; they were done in that quiet, unostentatious manner which characterized his whole being."

SOME CORRECTIONS.

After the issue of the last number of the Bulletin our attention was called to two errors in the paper of Mr. Stebbins on the Metric System. On page 14, line 22 from bottom, read

Hydroquinone	15 grams.
Sodium sulphite	75 "
Water	500 c.c.

instead of the figures there given. Also on page 15, first line, read as follows, instead of formula as there given.

Piffard's Pyro Developer.

No. 1

Water	400 grams.
Sulphuric acid	1 gram.
Sodium sulphite	100 grams.
Pyro	25 "
Potassium bromide	1 gram.

Dissolve in the succession given and add water sufficient to make the whole measure 500 grams.

No. 2.

Water	400 grams.
Sodium carbonate (crystals)	50 "
Potassium carbonate	25 "
Sodium sulphite	25 "

Dissolve and add sufficient water to make the whole measure 500 grams.

Take 10 c.c. of each and add 80 c.c. of water. These proportions to be varied with the exposure and kind of plate used.

OUR ILLUSTRATION.

The picture that forms the frontispiece of this issue of the Bulletin is an excellent example of the work of the Photo-gravure Company of New York, and its adaptability to landscape work. The negative was taken by Mr. Ernest Edwards, the President of the company, and speaks well for his artistic taste in the selection of the point of view. There is something particularly restful in this little view, and we never tire of noting many points of beauty that strike us from time to time as we again return to look at the picture. It is just the spot an artist would select for a sketch, and also one where a poet would love to linger in his reveries, "fancy free." The picture tells its own story of peace and rest, and the quiet that can be found in these breathing spots in our crowded cities.

CLEANING UP THE HANDS.

To the Editors of the BULLETIN.

BULLETIN No. 1 of this year has just reached me, and after having perused it I feel a great desire to write to you a few lines about the article of Professor Peter T. Austin, Ph. D., bearing the title, "Cleaning up the Hands." I do not pretend in any way whatsoever to come forth with any criticism, or to say that Professor Austin is wrong; but after a personal and rather disagreeable and painful experience with bichromate of potash (or potassium dichromate, as he writes), I feel that it is not only my duty to disagree with him, but to speak a word of warning to those persons whom he calls "chicks;" for "old birds," I am induced to believe, are fully aware of the dangers which the said drug contains. Let me state here again that I am fully posted and know what bichromate of potash solutions are, and what danger they offer. For years I have handled them in the carbon process, and like the veteran photographer Mr. Duchochois, I have been a victim of it, and for years have suffered from its dreadful effects and consequences.

Of course, if a person has to make up his mind to choose one of the drugs (and particularly the "chicks"), let them take by preference the bichromate; but there is, so far as I know, no necessity to use it for the said purpose. Those black nitrate stains, even if they do not offer a fine and pleasant aspect for the hands of an amateur, and will not look very nice, but by all means it will be more reasonable and honorable to keep them than to use such means to get rid of them. Besides, are there no other means to avoid those black stains? Yes. The amateur, who generally is a man of some means, may buy a pair of rubber gloves, or may buy ready sensitized paper. The photographer who does not like to show silver-stained fingers and hands, has at his disposal the iodide of potassium and the hyposulphite of sodium, and I feel sure that if he likes he knows pretty well how to use these two drugs to clean his hands and fingers.

But for those who do not know it, I will tell them how to proceed. Let them wash their hands with soap and water, and then in a nearly saturated solution of iodide of potassium, say, for two minutes, and after this wash in the fixing bath (or a pretty strong solution of hyposulphite), and all the stains, if not already too long on the skin, will disappear as by enchantment. A good after-washing with soap can do no harm. This is a simple, effective, and by all means harmless proceeding.

The bichromate of potassium, as is well known, has a peculiar power of penetrating into the skin (by absorption of the pores), and, if repeated often, produces ulcers and eruptions, which resist in a surprising way any treatment.

I hope these lines will meet your kind attention and find a place in your next BULLETIN, for I consider it my duty to warn the fraternity against the use of that dreadful drug.

Respectfully yours,

MAX BOLTE.

To the Editors of the BULLETIN.

"HANDS off" of any mixture containing chromic acid, as that recommended by the learned professor from Rutgers College, for removing stains from the fingers. For not only will the stains be removed, but the flesh as well. Had he taken the trouble to consult the BULLETIN and read the articles published against the use of bichromate, more especially that of Dr. John H. Janeway, on page 646 of Vol. XVI, he would not have been so liberal with his kinks for old birds.

L. H. LAUDY.

ANTHONY'S
Photographic Bulletin.

EDITED BY
Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.,
and a corps of practical assistants.

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Advertisements should reach us not later than the Saturday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, six, twelve or twenty-four issues.

E. & H. T. ANTHONY & CO., Publishers.

BOSTON CAMERA CLUB.

BOSTON, January 5, 1888.

REGULAR meeting of the club was held at the rooms this evening, *President* CABOT in the chair.

Reading records was dispensed with, and the meeting proceeded to elect officers for the ensuing year with the following result: *President*, GEORGE E. CABOT; *Vice-President*, FRANCIS BLAKE; *Secretary*, EDWARD F. WILDER; *Treasurer*, WM. GARRISON REED; *Librarian*, WM. S. BRIGGS; *Executive Committee for three years*, HENRY N. SWEET, RUFUS A. BULLOCK.

The Treasurer's report was read, and showed a very gratifying condition of the finances and membership of the club.

The Auditing Committee reported the Treasurer's accounts examined and found correct.

Section 1 of the By-Laws was amended, making Monday in place of Thursday as the meeting night of the club.

Several resignations were read and accepted, and Mr. Dusseault was by request transferred from the associate to active list, and Mr. Paten from the active to the associate.

The following gentlemen were elected to active membership: Messrs. Roger Tileston, Brookline; Joseph A. Frizzell, South Boston; and G. Edwin Alden, M. Ogden Jones, Dr. Samuel Crowell, Edwin B. Holmes, and George D. Milne, of Boston.

Dr. J. N. Borland, of New London, Conn., was elected an Associate Member.

A letter was read inviting the club to participate in an exhibition of the Liverpool Amateur Photographic Association to be held in March next.

Mr. Brackett, of the club, next showed and explained his universal drawing instrument.

Although designed by him in the first place to cut openings for lantern slide mats of an endless variety of shapes and sizes, the instrument has proved itself capable of a wide range of work and appreciable to the solution of geometrical problems, construction of polygorial shakes perspective, projection, framing, etc.

The exhibition was of great interest and was much enjoyed and appreciated.

Announcement was made of the election of Messrs. George E. Cabot, Francis Blake and Edward F. Wilder as members of the Joint Exhibition Council on the part of this club.

The next meeting will be on Monday evening, the 17th, when the lantern slides from St. Louis will be shown.

Meeting then adjourned to partake of a collation provided by the Entertainment Committee.

EDWARD F. WILDER,
Secretary.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

REGULAR MEETING, January 3, 1888.

President NEWTON in the chair.

The *Secretary* reported that he had received for the section the December numbers of Anthony's BULLETIN and Scovil's *Photographic Times*. Also, a contribution from the Scovil Manufacturing Co. of Jerome Harrison's "History of Photography and Printing Methods," by W. H. Burbank, and the "American Annual of Photography for 1888." For all of which the section returned an unanimous vote of thanks.

The *Secretary* also stated that he had received for the section, from J. W. Queen & Co., Philadelphia, a very excellent framed copy of the "Constitutional Centennial Celebration Parade," and read a letter accompanying this valuable historic gift containing every particular as to how such an excellent result had been secured. As this picture, together with many other valuable contributions, would be kept on permanent exhibition in the lecture room of the Institute, all photographers having the opportunity of visiting or attending the meetings of the section would, no doubt, have their ideal of what constituted good work somewhat magnified by a careful study of these gems of photographic art. On motion, a vote of thanks was tendered to J. W. Queen & Co. for their valuable and highly appreciated present.

The Chairman of the Executive Committee reported that at the next regular meeting, Tuesday, February 7th, a paper would be read by the Vice-President of the section (J. B. Gardner) entitled "Photography: Its Requirements and Capabilities." After which there would be an exhibition of lantern slides contributed by members and their friends.

Notice was also given of the informal meetings on the third Wendesday evening of each of the winter months; and an invitation extended to all interested in familiar talks on photography whether practical or theoretical. In announcing the subject of the evening, the speaker said:

"*Ladies and Gentlemen:* We are now to spend an evening in Switzerland with Professor Elmendorf, who will show and explain to us some of the wonders of the world abroad, describe its most attractive scenery, and the customs and habits of its people."

The Professor was now formally introduced, and, with no apparent studied forms of speech, briefly but pertinently described the views he had personally captured during the summer of 1887. These views, noting as they did objects of universal interest, as well as being striking examples of the sublime and beautiful both in nature and art, exhibited in the Professor not only the instincts but the cultivated eye of an artist, and a hand skillful in preparing the resources of photography to their extremest limits.

At the close of the exhibition, the Professor stated that all his negatives were made on Stanley plates (size 4 x 5), with Dallmeyer lenses; and the lantern slides were made by contact printing on Carbutt's transparency plates developed with hydrokinone.

At the conclusion of this brief statement, the audience expressed its gratification and indebtedness to Professor Elmendorf by long and loud applause, and by tendering to him an unanimous vote of thanks.

On motion, the section then adjourned.

ST. LOUIS ASSOCIATION OF AMATEUR PHOTOGRAPHERS.

THE regular meeting of the St. Louis Association of Amateur Photographers, January 3, was called to order by *President* BAIN, with fifteen members present.

The minutes of December 20, 1887, were read and approved as read.

On recommendation of the Membership Committee, Mr. R. F. Kilgen was elected an active member, and the Secretary was instructed to notify him thereof.

On motion of the *Secretary*, it was resolved to give a public exhibition of the "Cincinnati Lantern Slides," Tuesday, January 10, 1888, at 8 P.M., in the lecture-room of the St. Louis University. (The exhibition was well attended and proved very interesting, as the slides were excellent both as pictures and as photographs.)

Mr. E. C. JEWETT read an extremely interesting paper on "Hydroquinone as a Developer," which aroused an excellent discussion of developing agents.

Mr. C. M. ALEXANDER presented several time-stained daguerreotypes, and explained how he had removed the tarnish successfully with cyanide of potassium solution.

There being no further business, the association adjourned to meet on Tuesday, January 17, 1888, at 8 P.M.

W. M. BUTLER,
Secretary.

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

THE Twenty-sixth Annual Meeting of the society was held Wednesday evening, January 4, 1888, with the *President*, Mr. FREDERIC GRAFF in the chair.

The *Secretary* called attention to a circular received from the Dundee and East of Scotland Photographic Association, announcing an exhibition to be opened on February 16, 1888.

A circular was also read announcing that the Second Annual Exhibition of the combined work of the Photographic Society of Philadelphia, the Society of Amateur Photographers of New York, and the Boston Camera Club, would be held in Boston, in March next, under the auspices of the latter society. Members were urged to prepare exhibits which would worthily represent the society, and to have them ready for forwarding by the date which would duly be announced in a future circular containing rules, etc.

The annual report of the Treasurer was presented and showed a satisfactory financial condition of the society.

The Executive Committee presented their annual report, from which the following extracts are made: "The Photographic Society of Philadelphia may well look back upon the year just closed as one of marked success. The membership has increased to 152, and in consequence of the constant growth, the present accommodations of the society have become insufficient for the attendance at the meetings.

Acting under instructions from the society, an agreement has been made for leasing quarters in the building now being constructed at 1,305 and 1,307 Arch street, which will provide a commodious and agreeable place for meeting.

The agreement entered into with the Boston Camera Club and the Society of Amateur Photographers of New York, relative to holding joint exhibitions, was successfully inaugurated by the exhibition held in New York during the spring, to be followed this year with one at Boston, for which your committee hope the members will make early preparations to insure our proper representation.

The society also having joined the lantern interchange, the display of slides collected by the various societies associated in it, promises to give interest to our conversational meetings during the winter and spring months.

The exhibition of lantern slides at Association Hall, on January 12th, was, both financially and technically, successful, a large audience being present.

During the year the attention of the society has been given to the use of magnesium powder for instantaneous photographly at night; to hydroquinone as a developer for negatives and positives; to the transfer of films developed upon paper, to glass, muslin, wood, porcelain, etc.; to the production of negatives and positives by heat rays alone through the medium of luminous paint; to the more extensive employment of stripping films and isochromatic plates; to the fallacy of so-called "composite photographs," and to the use of the electric light in the optical lantern.

Among the subjects of interest brought before the meetings during the year, in the shape of papers, etc., were the following:

"Silver Printing on Albumenized Paper," by Dr. Ellerslie Wallace.

"On the Preparation of Gelatino Bromide Plates, and a newly designed Drying Box for same," by Mr. William Bell.

"Photographing at Niagara Falls," by Mr. Charles R. Pancoast.

"Photographing by the aid of the Phosphorescent Tablet and by Heat Rays," by Mr. Frederick E. Ives.

"Photographing by Gas Light," by Mr. John Bartlett.

"Some Photographic Heresies," by Mr. Charles Truscott (visitor).

"The Gallic Acid and Silver Nitrate Intensifier," by Mr. John G. Cassebaum (visitor).

"Orthochromatic Plates in Photomicrography," by Mr. W. H. Walmsley.

"A Few Photographic Points about the Yosemite Valley," by Mr. George Vaux, Jr.

"The Shortcomings of Photography in Relation to Art," by Mr. John Bartlett.

"Composite Photography," by Dr. Ellerslie Wallace.

Eleven business meetings have been held, twelve conversational meetings, and three special meetings, or twenty-six in all, with an average attendance, except during the midsummer months, of forty-four.

On the 26th of November the society celebrated the twenty-fifth anniversary of its organization by a reception to its members and friends.

A number of volumes have been added to the library, and a new optical lantern to the apparatus.

The Lantern Exhibition Committee announced that an exhibition of slides from the work of members would be held at Association Hall, on Wednesday evening, January 11th.

The Committee on Membership reported the election of the following active members: Messrs. Daniel Jones, George H. Kirk, Charles T. Fellows and Edmund Sterling.

The election for officers and committees for 1888 resulted as follows:

President, **FREDERIC GRAFF**; *1st Vice-President*, JOHN G. BULLOCK: *2d Vice-President*, JOSEPH H. BURROUGHS; *Secretary*, ROBERT S. REDFIELD; *Treasurer*, S. FISHER CORLIES.

Executive Committee—Herbert M. Howe, M.D.; Ellerslie Wallace, M.D.; William A. Dripps.

Excursion Committee—Charles Barrington; Samuel Sartain; Joseph H. Burroughs.

Committee on Membership—Henry T. Coates; Willliam A. Dripps; Galloway C. Morris; David Pepper; Edward W. Keene; William L. Springs; Joseph H. Burroughs; John Bartlett; George Vaux, Jr.

Committee on Revision of Minutes and

Articles for Publication—John C. Browne; John G. Bullock; Robert S. Redfield.

The President, in acknowledgment of his re-election to office, made the following address to the members:

(*To be continued.*)

ROCHESTER ACADEMY OF SCIENCE—PHOTOGRAPHIC SECTION.

REGULAR MEETING, JANUARY 17, 1888.

President CROUGHTON in the chair.

The *President* reported that Messrs. E. E. Bausch & Son, opticians, had kindly donated to the section a condensing lens to replace that broken at our last meeting. Mr. Mathews presented to the society a receipted bill for tickets used at our lantern exhibition. The Secretary reported that the Scovill Manufacturing Company and E. & H. T. Anthony & Co. had kindly offered to furnish the section gratuitously with copies of their respective publications, *The Photographic Times* and the BULLETIN. The Secretary also reported a gift to the section by D. Hovey & Sons, of a book entitled "A History of Photography."

Upon motion, the sincere thanks of the section were extended to the gentlemen named above, who had so generously given evidence of the interest which they felt for the success of the society. It was decided to present to the Reynold's Free Library the above mentioned book and periodicals and also all literature received in the future by the society and pertaining to the art of photography. This literature will be placed in the reference department, where it will be accessible to all. The paper of the evening was then read by Mr. C. F. Hovey. It was entitled "Positive Printing," and dealt principally with albumen prints. Mr. Hovey gave evidence of a thorough knowledge of his subject and originality of thought and expression.

At the close, a few exceptions were taken by the President and some of the members regarding the acidity, neutrality or alkalinity of the bath, and much information was derived from the discussion. The President exhibited some fine carbon prints and said a few words on the subject. Mr. Hovey showed some artistic Pacific Coast views printed on albumen paper. The Secretary then, with his characteristic modesty (?) produced some poor platinotype prints made by the way of experiment from material manufactured by himself, and said what might be done with the process by a person that knew how. J. F. Stiles, a New York amateur, was among the visitors present.

Yours "positively,"

MILTON B. PUNNETT,

Secretary.

SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

REGULAR MEETING, DECEMBER 13, 1887.

The meeting was called to order at 8 P.M., *President* WALKER in the chair.

The *President*—You are all familiar with the efforts that have been made to secure a proper light for night work. The story has been told here once before and there is consequently nothing much for me to say in regard to it. Dr. Piffard's article on the subject, very recently published, gives all that he has been able to acquire in regard to the matter. But to-night we have with us, by our invitation, Mr. R. Gädicke, Jr., of Berlin, whose firm are the inventors of a light widely published and widely known, and for which he has great hopes and great claims. We have, as I say, invited him here, and are pleased to offer him every facility in our power, and are willing to encourage him in every way we can in order that he may exhibit that light to the best possible advantage. I make these few brief preliminary remarks simply for the purpose of presenting him to you, and then he will proceed with his experiments.

After he has concluded, there will be a paper read by Mr. James H. Stebbins, succeeding which the proceedings will be confined to the business of the society, and of course those persons who are not members of the association and interested in that business particularly, will take the gentle hint that they may remain if they choose, but there will be nothing of interest to them.

I now have the pleasure of presenting to you Dr. Gädicke of Berlin. The Doctor does not speak the English language well, I am informed, and asks the privilege of having his words interpreted by Mr. Ehrmann, whom we recently had the pleasure of listening to in this room.

Dr. Gädicke then adjusted his camera, prepared his powder for the flash of light, and placed a sitter between two screens.

Dr. EHRMANN—The picture is taken by the flash of light produced by the burning of the powder. The Doctor has constructed a lantern of his own, and the construction of it you see for yourselves. He will not tell us the composition of his powder, thinking he will be able to obtain a patent for it. Formerly they used in Berlin a compound of metallic magnesium, sulphide of antimony, and chlorate of potash, an entirely different mixture to that you have seen shown here by Dr. Piffard and others.

At this juncture the flash of light occurred; the picture was taken, and Dr. Gädicke proceeded to the dark room to develop it.

After the lapse of about fifteen minutes from the time the picture was taken, Dr. Gädicke presented his negative for inspection.

Mr. EHRMANN—There is the negative that Dr. Gädicke took. [The negative was then passed around.] Now if any lady or gentleman present wishes to have any further information as to the Gädicke light I would be happy to give it. Here is a picture taken by five seconds daylight. The powder compound that Dr. Gädicke uses is not at all dangerous. It is not explosive under any consideration. A photographer of Berlin has carried it around with him in a loose paper in his pocket, together with keys and a knife and one thing and another, for three or four weeks and never had any explosion occur, and he claims that is a good sign of its being safe.

Dr. Piffard then placed some of his powder on a brick and pounded it, but it did not explode.

The *President*—We have done with the exhibition of powders, and now we enter upon another subject of interest. Because of the discussion that has frequently taken place in these rooms as to the weights and measures used in the measurement of photographic chemicals, and in order to get as much light as we could upon the subject, at my request Mr. James H. Stebbins, Jr., a member of this society, has contributed an article on the subject which he will now read, illustrating by diagrams on the blackboard.

Mr. Stebbins then read his paper. [See page 11.]

Mr. ROOSEVELT—I came here a little late, I am sorry to say, but I will occupy you with one or two words.

That [referring to a formula written on the blackboard by Mr. Stebbins] is the smallest recipe that Mr. Stebbins has been able to give you. The other was more complicated and much larger, and then he only gave you one out of about a dozen that he had.

Now allow me to show you mine. Assume you have got your scale—little weighing machine—and you want to mix the developer. You have, we will say, got a small plate, for which you want one ounce, and one a little larger for which you want two ounces of developer. You also have one, we will say, still larger than that, for which you want four ounces of developer. Suppose you take the one of two ounces. Three grains of pyro to the ounce is what you want, and you will therefore require six grains. If you use soda you know that you will want six times as much of that to go with it, thirty-six grains. You will generally find when you are taking the recipes together that about the same amount of sulphite of soda (although some of the directions are four) will give you what you need.

In order to make the matter very simple, you have now got your thirty-six grains weight in your scales, which throw into your graduate. Then weigh the sulphite, and also put that into your graduate, then add your two ounces of water and your developer is made. That is all I have to say.

Dr. HOAGLAND—I want to ask the gentleman when he tells us to take an ounce of anything what does it mean? Is it 480 or 437½ grains?

Mr. ROOSEVELT—I don't use the term ounces, I say grains. That is the very point that I make about it. But of course, in reference to what Mr. Stebbins says, I do not mean for a moment that what he has advocated would not be the proper scientific measure. Instead of using grains of course we can use grams, the litre and metre, but when we do use them let us spell them m-e-t-e-r and l-i-t-e-r. Now that very difference in spelling alone will destroy your system if you want to make it popular. We can say meter but we do not like to spell it m-e-t-r-e. You should spell them as they ought to be pronounced, and then an Englishman or an American can handle them, and they would be far more convenient if they were brought into general use. But for practical use the system that I pointed out is the one that has given me general satisfaction during my experience as an amateur.

Dr. PIFFARD.—Mr. Roosevelt said he read his formula that way [indicating on the blackboard]—six grains of pyro; a metric man would write it so [illustrating on the blackboard]. It is the same quantity. The metric man would write it thus [illustrating] and the quantity of water indicated by that mark would be known the world over. But if two ounces of water were written as one of the constituents of a formula, some people would measure out a certain quantity, and others quite a different quantity. Sixty grams is sixty grams all the world over, but an ounce is not the same everywhere. It is not the same in this country as it is in England.

Mr. WAINWRIGHT—One point has been brought out in comparing these two systems, and that is in one system, the English, we have several different units for weight and measurement of capacity, space, etc.; whereas, so far as photography is concerned, in the metric system we have but one single unit for weight and measure in either case, and that is the gram. We therefore need use but that in expressing either measures of capacity or weight, and that would simplify it instead of using grains.

Mr. MALI—I would like the privilege of saying just a word. When I came to this country a few years ago, the first thing that I wanted to know was if the metric system was used here, and I asked the boys in the office down town where I was engaged, and ascertained that they knew nothing about it. That is, not one knew the whole system, and on further inquiry I found not one boy in ten knew anything about it. But you will never find that in a country using the metric system. If you go on the Continent—in Germany, France, or anywhere else—you will find that every boy from twelve to fifteen years of age knows the system. Even the ladies know it. Here you do not find a single lady that knows it. If the system was adopted in this country it would be learned in a very short time, and when universally understood would, I have not the slightest doubt, give entire satisfaction. I am very partial to that system myself.

The *President*—Of course the system which we are using to-day we have inherited, so to speak, from our ancestors. The English measurement came to us originally in a more awkward shape than it is in at present. There is no doubt whatever we would hail with delight the introduction of the metric system into this country, but the only difficulty seems to be to get our people to unite on it and popularize it. It has been suggested that this association endeavor, by communicating with every manufacturer of plates in the United States and all professional photographic chemists, to bring about a reform of that kind, and also urge other associations to do the same thing.

Mr. CARBUTT—A member asked the question, "What number of grains is meant to the ounce where a certain formula as given, calls for ounces?" When ounces are spoken of it means 437½ grains, because all our chemists buy by that weight. It is only the precious metals that are sold at the rate of twelve ounces to the pound. Where ounces are spoken of in all formulas, it means 437½ grains. Eight ounces when carefully weighed will weigh eight ounces avoirdupois.

Dr. PIFFARD—The standard fluid ounce of England weighs 437½ grains; the standard fluid ounce of America weighs 455 grains and a fraction.

Mr. WAINWRIGHT—I will mention a case in point that happened to me only the other day. I bought a couple of ounces of photographic chemicals at two stores, one ounce of the article in one part of the city, and the other ounce in another place. I weighed them and found that I paid more for one than I did for the other. The one that I paid the most for contained only 437½ grains; the other weighed 476 grains. I think since this subject has been brought before this society in the paper read by Mr. Stebbins, it might be well for the society to take some action in regard both to the system of weights and measures in use (I will not say among photographers, because we are an amateur society) at least among amateurs. It seems to me in the various publications that we have coming from different amateur societies there is a great diversity in the nomenclature and in the weights and measures that they use, also in the names by which they call the different chemicals. It seems to me that some uniformity would be very desirable among amateurs, and I think that some action should be taken in regard to that matter.

Mr. STEBBINS—I move that the chair appoint a committee to investigate that matter. I might say, Mr. Wainright, speaking of this matter, that this same question came up in the English Chemical Society, which of course is a scientific society, but the same principle applied there that does here. A diversity of nomenclature existed, and they conferred among themselves and adopted a system which was very favorably received, and is now in general use among all the societies whose proceedings are published in the English language. I think it would be very desirable if the American amateur societies would all do the same thing.

Mr. BEACH—In order to educate the members of the society in regard to this subject, I suggest that the society purchase a series of weights and measures and place them for use in the dark room.

The *President*—I will put the motion of Mr. Stebbins first. Mr. Stebbins moves that a committee be appointed by the chair to investigate this subject and confer with other societies, and that they take such action as they deem best to promote the introduction of the metric system.

Mr. WAINWRIGHT—I think the motion is a little too full. The only proper duty of a committee of that kind would be to investigate the general subject of the uniformity of weights and measures and nomenclature among various societies. Conferring with other societies is an after consideration. The first thing for the committee to do is to look into the subject thoroughly and find out whether there does exist such a thing as has been suggested.

Mr. Stebbins' motion, as amended by Mr. Wainright, was then put and unanimously carried.

The *President*—I appoint Mr. Wainright, Mr. Stebbins and Mr. Allerton as such committee. Those three gentlemen will please take this matter in hand and kindly give it attention.

Mr. Beach has moved that a set of metric weights and measures be purchased for the use of the members of the society and be placed at their disposal.

Motion carried.

The *President*—I have some notices to read that will be of interest to those present. In the first place I wish to say that since the last public announcement as to the election of members, there have been elected to membership the following gentlemen.

List of members elected then read.

The *President*—The amendments to the Constitution, which have been approved by the Board of Directors, will be submitted to the society in accordance with the provisions of the Constitution. It is proper to read the section under which that submission is made. [Reads Art. 8, Section 1, of the Constitution.] You will notice that it is provided in the Constitution that notification of the proposed amendment shall be submitted to the society at a regular monthly meeting. This being such, we propose to submit to you the Constitution as it has been approved by the Board of Directors, and we will thus conform to that section of the Constitution fully, so that hereafter there may be no question raised as to whether we proceeded constitutionally or not to adopt the amendments proposed by the Board of Directors. For that purpose I shall ask some gentleman present with good lungs and a willing heart to read that document. It is not very long, and that will be a formal submission to the society.

Dr. Piffard—In view of the fact that the members of the society have all been made acquainted with the contents of this document, I move that it be read by title only.

Mr. Roosevelt—I second the motion.

The *President*—The reason why we did not send with these proposed amendments a copy of the original Constitution is that we tried to save the cost of doing it. There is nothing in the section which I have read which indicates that we are bound to do it. Everybody here is presumed to have a copy of it, but we have been out of them for the purpose of circulation for a long time, and thought it was an almost useless expense to have more printed when we could pass it around here or put the sections on the bulletin board and anybody could see them.

Then followed a long discussion upon the proposed amendments to the Constitution, after which meeting adjourned.

[*From American Machinist.*]

PHOTOGRAPHING MACHINERY.

It is generally conceded by photographers that one of the most difficult objects to make a satisfactory photograph of, is a piece of machinery.

The reason of this is quite apparent upon a little consideration, and lies in the fact that machinery almost always consists of parts which are unfinished, and painted a dark color, so that they reflect very little light, while other parts are brightly finished, and often polished, so as to reflect about all the light which falls upon them. The result is, that when a negative is exposed long enough to bring out the dark parts of the machine distinctly, the exposure is entirely too long for the finished parts; and if, on the other hand, the exposure is timed for the bright parts, the darker portions are usually represented by black patches which show absolusely nothing of form or construction.

A great many photographs of machinery come to this office, and many of them show that efforts have been made to overcome this difficulty. Among other methods, lamps with reflectors are placed so as to illuminate the dark portions

This makes the machine itself look about right to the eye; but since no artificial light, except the electric light, has any effect upon a photographic negative, it will be seen that such a plan can be of no benefit, and the results show that it is not.

There is a plan not generally known, which always produces satisfactory results, and that is to paint the machine all over; using for the finished parts a paint mixed with any oil which will not readily harden or dry out, so that after the negative is taken, the paint may readily be wiped off.

It will be seen that by this means all parts of the machine can be made to reflect light equally.

It is a good idea, also, to have several different shades of this paint, and after the first exposure, any parts which do not come out sufficiently may be painted lighter, while those which are too light may be painted darker, and thus, by a few experiments, a perfectly satisfactory negative may be obtained.

This is a matter of considerable importance to many maufacturers and mechanics, whether they make photographs to send to prospective customers or whether they are taken for engravers to work from, and the method indicated above has been used enough to prove that it is of great practical value.

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AN OBJECT LESSON.—"Papa, how do nations get into war with each other?" asked Tommy Seasonby.

"Sometimes one way, sometimes another," said the father. "Now, there are Germany and Spain – they came near getting into war because a Spanish mob took down the German flag."

"No, my dear," put in Mrs. Seasonby, "that wasn't the reason."

"But, my darling," said Mr. Seasonby, "don't you suppose I know? You are mistaken. That was the reason."

"No, dearie, you are mistaken. It was because the Germans—"

"Mrs. Seasonby, I say it was because—"

"Peleg, you know better. You are only trying to—"

"Madame, I don't understand that your opinion was asked in this matter, anyhow."

"Well, I don't want my boy instructed by an old ignoramus."

"See here, you impudent—"

"Put down your cane, you old brute. Don't you dare to bristle up to me, or I'll send this rolling pin at your head, you old—"

"Never mind," interrupted Tommy, "I guess I know how wars begin."—*Chicago News.*

◆

Bibliography.

THE AMERICAN ANNUAL OF PHOTOGRAPHY AND PHOTOGRAPHIC TIMES ALMANAC for 1888. Edited by C. W. Canfield. New York: Scovill Company.

This is the second issue of this well edited and neatly printed annual. Like its predecessor it is filled with a great many good things in the line of practical photographic work; 48 pages are devoted to an almanac and lists of officers of photographic societies; 212 more are used for articles by well-known writers on photographic subjects, are well printed, and cover a wide range of photographic subjects; while 68 more pages are taken up with formulas and tables. Altogether the volume is well edited and printed, and is a useful addition to a photographer's library.

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What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

Q.—C. S. B. writes: What causes a scum or coating to form on my prints while washing, and before they go into the salt to be reddened? I have a good clean bath, 60 grains strong, floated 1¼ minutes, bath slightly alkaline. Last week I had 200 cabinet prints in one batch that were very bad. I am not much bothered except in cold weather. I have my washing water warmed just enough to take away the cold chill, and I am very careful.

A.—It appears to us that there must be something in your wash water. That it is bad in cold weather is probably due to the fact that the surface water is frozen up and you get ground water that is loaded with impurities from drainage of some kind, probably chlorides. Test the water with some silver nitrate solution; if you get a white curdy precipitate, insoluble in nitric acid, it is due to chlorides in the water.

Q.—A. W. writes: How many grains of soda or soda and potash are required to the ounce of mixed developer for a properly exposed dry plate of ordinary rapidity when two and a half to three grains of pyro are used? In boiling an emulsion I pour the silver into the hot gelatine and bromide, and I am often troubled with the silver bromide precipitating even after the last gelatine is added. How can I prevent this? I have the solutions acid. Do I use too little gelatine in boiling?

A.—You may use ten to twelve grains of soda carbonate, or ten grains of a mixture of equal parts of granulated potassium carbonate and granulated sodium carbonate to two and a half or three grains of pyro in one ounce of water. Your trouble with the emulsion is probably due either to adding the silver solution too fast and not stirring thoroughly, or else to an improper proportion of acid, either more or less than normal. One minim of strong hydrochloric acid to about 140 grains of potassium bromide is recommended by some authorities.

Q.—A. W. K. writes: I am using the N. P. A. paper, and I would like to know what the cause and cure is for the silver not washing out or from the surface. I use acetic acid in the first washing and have tried salt and various other ways, but the silver still adhers to the paper. I don't notice it until I get them into the toning bath; they will tone at first, but soon the bath gets so much silver in it that toning stop. I have to make a new one, and take the prints and wash them by hand until I remove the free silver.

A.—We think the trouble must be with your wash water; or else some impurity in your acetic acid; possibly hydrochloric acid in your acetic acid. To test your acid, add to it a few drops of chemically pure nitric acid and then silver nitrate solution; if it contains chlorides you will get a white curdy precipitate of silver chloride. The same tests can be applied to the wash water.

Q.—W. R. A. writes: Will you please answer the following questions through the columns of the BULLETIN: 1. What is the preparation used to bleach out a proof after having been outlined in India ink for newspaper cuts? 2. Is a proof (unfixed) or a toned and fixed print used to work on? 3. Is there any article on the subject or any reference to it in any book or magazine?

A.—A solution of corrosive sublimate (mercuric chloride) is used to bleach untoned, but fixed, proofs after outlining with India ink. Several articles on the subject appeared in the BULLETIN during the past year; see index in last number for December last.

Views Caught with the Drop Shutter.

The Philadelphia Photographer for 1887, in two handsome volumes, comes to hand to adorn our library. Dr. Wilson has certainly done well in these volumes which are full of good things photographic. There is only one fault we find with them, and that is the binding in of the advertising pages with the literary matter. We think this is a mistake, as the advertisements are only of passing value, while the contents of the other pages are valuable for all times.

MR. W. GARRISON REED, of the Boston Camera Club, has recently devised an excellent standard mat for lantern slides, and kindly sends us a box of them. This is admirably thought out, and if properly used will save no end of trouble to users of transparencies in the lantern. Full directions, containing many valuable hints about slides, accompany the box of mats, and we strongly recommend those who need them to try this new devise.

H. W. KELLOGG'S studio at 21 South Main Street, Fall River, Mass., was sold on January 1st, to H. B. Akin, for $4,000.

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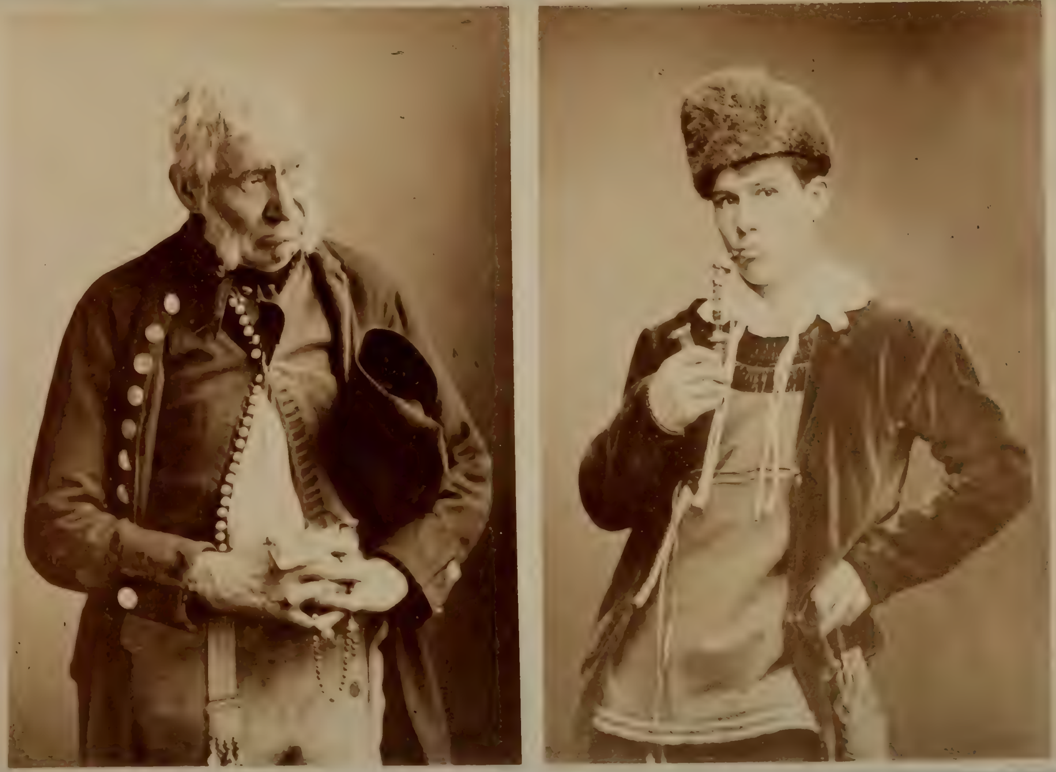
Evening Post Job Print, N. Y.

ROCKWOOD. PHOTO. UNION SQ. NEW YORK.

"GOOD MORNING"

A Golden Sunbeam stole its way
From Heaven, for Earth's adorning,
And from the threshold of Life's day,
It smiles a sweet "Good Morning"
Ella Wheeler Wilcox.



Bavarian Studies

BY OSCAR SUCK.
AWARDED GOLD MEDAL AT CHICAGO CONVENTION. 1887.

PRINTED ON
EX. BRILL. N. P. A. ALBUMEN PAPER
BY
ROBERTS & FELLOWS.

COPIED ON
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Photograph
BY
W. G. C. Kimball,
Concord, N. H.

ANTHONY'S

Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

FEBRUARY 11, 1888. Vol. XIX.—No. 3.

THE MINNEAPOLIS CONVENTION.

THE officers of the Photographers' Association of America have called the members to assemble in Minneapolis to hold the next Convention. We are of opinion that the distance which many of the Eastern members would have to travel to reach that city will prevent them from attending, although they may wish very much to go. Nevertheless, the Association is a national one and there are surely enough photographers in the West who are interested in our art to secure a goodly attendance. To one and all we appeal to give a helping hand to make the meeting a success. When we remember the men who form the Executive Committee we are sure that the preparations for the convenience and comfort of the attending members will be such as to command the approval of all who go to the Convention.

The City of Minneapolis, where the meeting is to be held, has a population of about one hundred and thirty thousand, and is situated at the Falls of St. Anthony, on the Mississippi River, the greatest water-power center in the United States. The celebrated Falls of Minnehaha are within three miles of the city, and Lake Minnetonka, a delightful pleasure resort, comes within easy distance. There are fine streets, interesting buildings, and examples of fine architecture in the various churches and public offices. Indeed, there are many objects of interest for the photographic eye of the camera, and those who go to the city should not fail to capture some of these upon the dry plate.

In regard to the provisions for the meeting, we are assured that there are several good buildings suited to the purpose, more especially if the meetings and the exhibition halls are kept separate. We have before given our views upon this question, and in Chicago it appeared to us that the close proximity of the exhibition hall was the greatest nuisance that could possibly be associated with the assembly room. But the Executive Committee will doubtless manage these matters so that the meetings may be devoted to the reading of papers and discussions that shall add to our knowledge of photography, and be a help to those who attend these Conventions for instruction. That members go to take part in the meetings was well illustrated in Chicago, when the call for the meetings in the evening was responded to in such a manner as to secure the best attendance we ever had at meetings at any of these Conventions. We sincerely

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hope that all the meetings for the reading of papers, and also for discussions will be arranged so that the members who desire to attend them will be able to do so without the annoying disturbances that have hitherto been the great drawback in these assemblies.

In the matter of prizes we are glad to note that our suggestion to limit the number of pictures competing for prizes has been adopted, and that only six pictures are allowed in any one class. In regard to this arrangement, we would remark that the number to which the pictures is limited is much too small for those of small dimensions, say cabinets or five by eight views. In the case of cabinets there should be at least one dozen, and the same number in small views. Again we note that there is no difference made in the case of large and small views in Class E, "Landscape Photography." Here it is very evident that with two pictures of the same quality otherwise, the larger one would get the prize because of the ability of the maker of the negatives to own a large camera. The same remarks also apply to Classes F, G, H; in all of which there are always many competitors and a great variety in the sizes of the pictures. Nevertheless, some instructions might be given to the judges in order to obviate the difficulty that would arise in having to decide between a large and small picture of equal merit photographically and from an artistic standpoint.

The choice of judges has been placed on a different basis this year, and we hope that it will be carried out in good faith and harmony. It is a thankless task for a man to serve on a Committee of Judges and after giving his honest opinion of the merits of the pictures, to have a perfect torrent of abuse poured upon him by those who were unlucky enough as to fail to get a prize. We sincerely hope that the manner of choosing the judges, one by the Executive Committee, one by the competing exhibitors, and the third by these two together, will be faithfully carried out and satisfy all parties concerned. Let us have no more nonsense about having "no practical photographer on the board," and "judging professional work by amateurs" and such ridiculous accusations. The pictures should be judged from the point of view of those who would buy them, the average intelligent citizen. All that is necessary in a man to judge pictures is an appreciation of art and art principles. Who cares how an artist applies his paint to the canvas? Who cares what steel or copper an etcher uses or the man who made his needle? It is not how the result is obtained, it is the result and its harmony with artistic feeling that should be the guiding principle in judging these productions of photography. The sooner that our artists get this idea into their heads the better will be their work and the quicker will their efforts be appreciated by the community at large.

We are glad to note that the foreign exhibitors are given a little more encouragement this year. Four medals instead of two is certainly a more liberal provision for them, and we believe it will secure a larger exhibit for pictures. We heard complaints last year about the few medals offered to foreign exhibitors, but not until after the arrangements had been made and it was too late to get any alterations.

The gratifying condition of the treasury of the association is an assurance that every preparation will be made to have a good meeting in Minneapolis, and we strongly urge all our readers to do something for the art we love by sending either a paper or some pictures, or, better yet, by going to Minneapolis next July.

EDITORIAL NOTES.

On another page of the Bulletin we give some observations by Professor Wm. H. Pickering upon the Pinhole Camera, and advise our readers to take note of them. There are many circumstances where the utilization of the facts there spoken of will be of importance. The pictures sent us by the Professor are very instructive examples of the observations he has made.

We have constant complaints about blisters and other troubles with albumen paper. If our friends would only remember to keep their solutions all at a uniform temperature there need be no annoyances of this kind. But if the albumen paper is kept in a cold dry place, and then used at once in a warm damp room, there is sure to be trouble about mottling or something of that kind. Or if you use the silver bath at a very low temperature (below sixty degrees Fahrenheit) your paper will be unevenly silvered, and will not tone well. Furthermore, toning and fixing baths of too low, and not both at the same temperature, will cause measles and similar troubles. Be sure the baths and all solutions are at about sixty degrees Fahrenheit, and you will be surprised how smoothly the paper will work. Cold weather is the great enemy of the photographic printer.

Sergeant C. E. Von Sothen has again given us one of his charming flash-light views, which are so remarkable for the detail in the shadows. We are also very much pleased to be able to state that he has promised to make us some negatives to print illustrations for the Bulletin at an early date.

Scheele, the Swedish chemist, who discovered oxygen gas in 1774, and among numerous other things first showed that light decomposed silver chloride and set chlorine free, is to have a monument erected to his memory in his native town of Köping. It is rather a late day to take note of the contributions to science made by an apothecary's assistant, who lived to be the most remarkable worker in chemistry that the world ever knew. There are few fields he did not enter, and leave behind him evidences of his clear mind and patient industry.

The Year-Book of Photography has arrived and contains many interesting articles, as usual. An untouched photogravure of Queen Victoria forms the frontispiece, and is remarkable for the fine detail in the shadows. It appears to us that this picture should be studied by the American photogravure printers; it is quite a success. There is a fund of information in these annuals that does not appear to exist elsewhere, and they should be on the table of every photographer.

There is to be an exhibition of photographs this month in the Crystal Palace, Sydenham, near London, a novel feature of which is a grand display of lantern slides. It appears to us that this would be a good idea for the Minneapolis Convention, and afford considerable entertainment for the members during a portion of one evening. A prize given for this class of transparencies would bring out some most beautiful work in this field of photographic art.

A method to use hydroquinone as an intensifier is given by Mr. A. R. Dresser in the *Amateur Photographer*, as follows: "First bleach with mercury (as usual) and then redevelop with the hydroquinone developer (in place of ammonia).

I find that you can redevelop to nearly any extent. One need not use new developer (unless the image is very thin), as the used developer does very well. I always use this developer for lantern slides, and find it all that can be wished; but for ordinary use it is very slow.

"I am not aware that any one has used hydroquinone for intensifying before. For under-exposed negatives it works very well, and so far I have found no stain from using it."

In order to facilitate the use of the magnesium flash-light, our publishers have placed upon the market a pistol and cartridges to use in it, a single flash from which is sufficient for an ordinary exposure. The cartridges do not contain potassium chlorate and can be handled without danger of explosion from percussion or friction. It appears to us that this is a very neat way of applying the magnesium flash light.

The Cleveland Camera Club has passed through its first year of existence in a manner that gives much satisfaction to its promoters, and promises good results for the future.

The club was organized barely one year ago by half a dozen amateurs, and at present numbers twenty-eight members; with new names being added to the roll at nearly every meeting.

The following officers have been elected for the ensuing year: President, Rev. Dr. C. S. Pomeroy; Vice-President, Dr. Robert Dayton; Secretary, C. L. Warriner; Treasurer, A. D. Cutter.

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[*From our Special Correspondent.*]

ENGLISH NOTES.

The rapidly increasing literature of photography proves its growing popularity and usefulness. Messrs. Marion have just issued a new book by Professor W. K. Burton—"Practical Guide to Photographic and Photo-mechanical Printing"—a bulky octavo volume of 355 pages, well illustrated. I do not think I exaggerate when I say that it is one of the most useful and practical books ever published.

It is becoming the fashion here for the great stock houses to publish "Guides to Photography," in which their own goods only are described and recommended. Thus, Messrs. Mawson & Swan have lately issued a third edition of their "Photography Simplified," and Messrs. Marion a fourth edition of their "Practical Photography." I think the idea is hardly one to be commended.

"Double albumenized paper" has been in great favor of late, owing to the richness and brilliancy of the prints it produces. It is made by floating the paper twice upon albumen, the first coating being coagulated by means of steam, or by alcohol. But very much of the paper sold as "double albumenized" has in reality only received a single coating. This may be detected by soaking a piece of the paper in cold water, when all the albumen will be washed away; while if there really is a film of coagulated albumen on the paper it will not be affected, the outer soluble film only being washed off.

The most useful photometer I have ever seen is Decoudun's patent, introduced into England by the London Stereoscopic Company (110 Regent street, London). It is about the size of a watch, and consists of a series of holes arranged in a circle and covered with varying thicknesses of a translucent material. It is applied to the ground glass of the camera, over some part of the picture, showing "half tones," and the instrument is then rotated until the light, passing through the holes, of which only one at a time is exposed, is no longer visible. The thickness of the translucent material necessary to obscure the light is then read off (there is a letter corresponding to each thickness), and all that remains is to refer to a table on which the exposure required for that letter is stated. The table gives a range of exposures from half a second to six minutes.

Those who desire to get prints with black tones or ordinary sensitized paper should try the effect of substituting platinum chloride (to be obtained of any chemist) for gold chloride; it works well with the acetate bath. It will probably be found best to use about twice as much of the platinum as of the gold salt.

The "exhibition season" has set in with great severity. Invitations from Glasgow, Calcutta, Nottingham, Liverpool, Gloucester, and the Crystal Palace, lie on my table. The Crystal Palace show in February promises to be a very extensive one and includes several novel points, especially with regard to competitions of lantern slides, but also for intending exhibitors who have not got their pictures printed. We have now had for many days a succession of dense fogs, which have put a complete stop to all printing-out methods. As an experiment, I have just left a piece of Eastman positive paper for ten minutes under a negative in the open air, and it yielded not a trace of an image on the application of the developer; with the same paper and negative I get a good picture after ten seconds' exposure at a distance of two feet from an ordinary gas-burner. Pity us, ye who dwell under clearer skies!

The magnesium flash-light came just at the right time to furnish portrait photographers in this dull climate with a means of rendering themselves independent of sunlight. So far, I have found nothing better than the mixture of powdered magnesium with gun-cotton recommended by Dr. Piffard. A mixture of lycopodium and magnesium (suggested by Mr. Jerome Harrison) blown from a tube through a gas-jet also gives a brilliant flash; lycopodium (a fine yellow powder of exceeding lightness, the spores of a club-moss) has long been used in theaters to produce "flashes of lightning." It is worth buying an ounce or two of this curious substance, to rub the hands with it, or to sprinkle it on the surface of water. The hands may then be immersed in the liquid, which will no longer be able to wet them in the slightest degree. By treating the entire surface of the body with lycopodium one could enjoy a "dry swim," and be independent of towels.

I can hardly agree, however, with those who state that it is possible to take photographs of rapidly moving objects with the magnesio-cotton light. Several portraits that I have taken have been spoilt by the sitter involuntarily closing the eyes during the exposure, so that a double row of eyelashes is distinctly visible.

I had a "good time" of it last week, when I spent a day in a famous London factory, watching the manufacture of lenses both for photographic and microscopic purposes. The raw material—the glass and the brass—comes from Birmingham; all the glass is "Chance's optical glass," and probably few things show a greater increase of value in the manufactured as compared with the raw stuff. One cause of the expensiveness of good lenses was very plain, in the rigorous testing to which each lens is subjected at about five or six stages of its manufacture. If there is the least fault, that lens is put out of existence by the aid of a hammer.

One of Beck's specialties is the "Iris diaphragm," which they introduced for microscope work twenty years ago, and which they now also fit to most of their photographic lenses. By their arrangement there is a diaphragm permanently placed within the lens tube, and by simply rotating a ring (to which an index is fitted) on the outside of the tube, any desired aperture can be obtained at will. Those who have lost their stops, left them at home, etc. (and who with an extended experience has not had such a mishap ?) will appreciate the Iris diaphragm. Another good thing is that it prevents the entry of light and dust into the lens tube.

The London Camera Club has become a pronounced success. Although the subscription for London members is three guineas and for country members one guinea per annum (with an entrance fee of one guinea), the club now numbers more than 400 members. Almost every month sees some new plan for extending its usefulness, the latest being a series of lectures by that able amateur Mr. Lyonel Clark, assisted by other experts, and intended for beginners, or at all events for those who desire to know something more of photography than the mere art of uncapping the lens.

An interesting point under discussion just now is "how to mark lantern slides" so as to insure their being correctly placed in the slide-holder. I agree with the practice of the London Photographic Club, which is—"Lay the slide on a table, so that the subject appears in its natural position, and place two white marks on each top corner." When in use these white marks of course go downwards, next the light. If every one would follow this plan it would materially add to the happiness of lantern operators, including

TALBOT ARCHER.

THE ORTHOCHROMATIC VALUE OF COERULIN.

By VICTOR SCHUMANN, *Leipzig.*

Mr. H. BOTHAMLEY recommends, in his article about "Orthochromatic Photography" for the photographing of red objects, coerulin (BULLETIN, 1887, No. 23, p. 721), and coerulin is indeed an excellent red-sensitizer. I have convinced myself about this, and determined its value by prolonged spectral tests. The plates bathed after Dr. Vogel's formula proved considerably red sensitive towards the spectrum light of the sun and a kerosene lamp, but it would be a mistake to give them an advantage over the cyanin plate. No matter how powerful the coerulin may sensitize for spectrum red, it does not come up to the cyanin in that respect. The coerulin plate requires, even in strong sunlight, prolonged exposure to produce the spectral region A C. Under the same time of exposure a greatly over-exposed spectrum picture is obtained upon cyanin plates. Yes, even a cyanin plate colored in the emulsion will give the whole solar spectrum from A to the end of ultra-violet, not only much quicker, but also orthochromatically much more correct, than a coerulin plate.

Those who are willing to try the experiment with the aid of a spectrograph should proceed very carefully when using sunlight, as the latter is particularly very changeable in red and orange. The kerosene light I have found more reliable, particularly when the views cannot be taken in quick succession.

For the photographing of colored objects I would not like to recommend the coerulin. Even if they show much red, it will work so slow that it offers only very moderate advantages. The cyanin has here decidedly the preference, although it cannot be denied that it requires a more careful manipulation. It is known that only by very careful sensitizing pure cyanin plates, free from spots, can be obtained.

In photographing a spectrum it is different. A coerulin bath-plate sensitized after Dr. Eder's formula, will produce the spectral lines sharply even under long exposure, and such a spectrum is much clearer than that upon a cyanin bath-plate. But for weak light the coerulin is not energetic enough as a sensitizer.

Notwithstanding its only moderately sensitizing strength, the coerulin deserves our first consideration, being one of the few optical sensitizers which have been discovered for red rays. The discoverer is Dr. Eder.

THE PINHOLE CAMERA.

By Wm. H. Pickering, *Harvard Observatory.*

Having recently had occasion to take several photographs, using a pinhole as a substitute for a lens, I was much surprised at the distinctness of the images. The resulting negative is of course not as sharp, and a silver print from it would not look quite as well as if taken with a lens; but for bromides, where the detail required is not so great as for silver prints, very satisfactory results may be obtained. I have recently taken a number of photographs with pinholes of various sizes, and the following facts have been deduced: (1) The distance from the hole to the plate may be as short as desired, but should not exceed twelve inches. (2) The shorter the distance the better the definition. (3) The size of the hole is regulated by the distance. For a distance of twelve inches, the best results are obtained with a hole measuring three one-hundredths of an inch in diameter. If smaller than this, the image is blurred by diffraction; if larger, the image is likewise blurred. But for most purposes where shorter foci are used, we may lay it down as a rule that the aperture should in no case exceed a fiftieth of an inch, nor be much less than one one-hundredth. As regards exposure, with one one-hundredth of an inch aperture, and a focus of three inches, on a sunny day with a rapid plate, one should give about ten seconds. So that, although the exposures are longer than with a lens, it will be seen that they are by no means excessive.

The pinhole may be made in a piece of black paper, or in a piece of thin sheet metal; which should afterwards be thoroughly blackened. In either case the burr must be carefully removed. A simple method of avoiding the burr is to burn the hole in paper with a red-hot needle.

The advantages of the pinhole camera are: (1) That doing without the lens one saves weight and expense. (2) That one can take as wide an angle as the camera will admit of, say, 120 degrees on the horizon against 80 to 85 degrees with a wide-angle lens. (3) That all objects, near and far, will be in equally good focus. (4) That one may suit the size of the image to fit the plate without changing one's point of view. (5) That one may take a view, if necessary, directly towards the sun, as there is no trouble from fogging caused by the sun illuminating the surfaces of the lenses. Indeed, very satisfactory photographs may be secured showing the sun in the picture. In this case, however, the sun takes black instead of white, owing to the reversal caused by over-exposure. Finally, while not advising photographers to throw away their lenses and substitute pinholes, I wish to call their attention to the fact that the pinhole picture is not a thing to be wholly despised, and that there may occur circumstances under which the pinhole may prove a very useful auxiliary.

The pinhole principle may also be used for another purpose, more amusing, perhaps, than artistic, which was first suggested to me by Mr. J. R. Edmands. Let us substitute for the lens a narrow vertical slit, about three inches long by one-fiftieth of an inch wide, made by pasting two strips of black paper side by side. About two inches behind this arrange a horizontal slit of the same dimensions. Two inches behind this place the sensitive plate. The apparatus is analogous to two cylindrical lenses of different foci placed at right angles, but is more readily adjusted. If an exposure is now made we shall find everything distorted to twice the size horizontally that it is vertically. By turning the camera on its side we get a vertical distortion. By inclining the slits at different angles variously distorted pictures may be obtained.

CAMBRIDGE, MASS.

[Bromide prints sent by Professor Pickering fuller illustrate all he says, more especially the various distortions by the slits.—EDITORS.]

SOME PRACTICAL NOTES.

By COLEMAN SELLERS, M. INST. C. E., *Professor of Mechanics, Franklin Institute, Philadelphia.*

Printing from a broken glass negative.—Having had the misfortune to find a crack in one corner of a very good negative, to cut off the crack would have spoiled the picture. I tried to print from the cracked glass and got one good print; but in attempting to get another print, the crack ran across the plate and that print was good for nothing, showing the crack very distinctly. I had a mixture of turpentine and Canada balsam, equal parts of each, used in retouching negatives. I placed the negative in the frame and then painted the crack on the glass side of the negative with this mixture; saw that it soaked into the crack, filling it; then wiped off the surplus with benzine. The print made after printing was good, and so were all subsequent ones. The crack had not gone through the film, only through the glass. When preparing to print the third picture from the cracked negative, I noticed a row of small beads of the cement exuding from the crack; these I washed off with benzine, and after that I washed or cleaned the cracked part with benzine each time I used the negative.

Keeping silvered paper.—A noted chemist called to see me a few weeks ago, and having occasion to mention the method of keeping silvered paper as proposed by a firm in Massachusetts, I showed him one of the tin boxes containing the preservative compound. He took some of the material with him and since has written me as follows: "I found that the material which I took from that tin case at your house consisted simply of lime and charcoal. There was no chloride in it, so it could not be a chloride of any sort. Burned limestone or caustic lime is a good and cheap absorbent of water from the air, and also of carbonic acid and acid vapors, if present. The charcoal is introduced, probably, only as a disguise." These tin boxes weighing, say, eleven ounces each, box and all, are sold at the rate of two dollars for six boxes. It may be well for those who want to save a little to try lime freshly burned, that is, unslacked; perhaps it will answer the purpose.

THE LITERATURE OF PHOTOGRAPHY.

BY W. JEROME HARRISON, F.G.S.

(*Continued.*)

(14.) British Association for the Advancement of Science: Report of The. Yearly, from 1831 (York) to 1887 (Manchester). Fifty-seven volumes, 8vo. Published by John Murray, Albemarle street, London.

The published price has varied from 12s. to 26s. per volume, but is now 24s. per volume. The back volumes can, however, usually be obtained at from 2s. 6d. to 10s. per vol.

In the early days of photography—say from 1839 to 1860 or thereabouts—frequent papers were read before the British Association on photographic subjects; but of late years this has not been the case. As a *resume* of British science the annual volume is, notwithstanding, invaluable.

(15.) British Journal (The) Photographic Almanac, *and Photographer's Daily Companion. A complete compendium of Photographic Art Science:* 1861–1884.+

The volume for 1861 was "presented to readers of the *British Journal of Photography,*" and contains pp. xvii and 56. It was of a small size to "allow of the almanac being placed in any pocketbook."

No charge was made for the first five or six volumes of the "almanac;" the volume for 1868 was sold for 6d.; and the price of all subsequent volumes has been 1s.

The volume for 1888 contains 712 pages; it is an octavo volume, published at 1s. (paper covers), by H. Greenwood & Co., 2 York street, Covent Garden, who have published the "almanac" from its commencement.

The first two volumes (1860–61) were edited by Samuel Highley; that for 1863 by James Martin; 1864 by Emerson J. Reynolds; from 1865 to 1879, and 1887 and 1888, J. Traill Taylor; the volumes for the seven intermediate years, 1880–86, being edited by W. B. Bolton.

British (The) Journal of Photography. See *Liverpool Photographic Journal.*

(16.) Camera (The). A monthly magazine for those who Practice Photography. No. 1, for June 1st, 1886. Each number contains 26 or 28 pp. of letterpress, a whole-page illustration and wood-cuts. Edited by T. H. Hepworth, and published by Wyman & Sons, 74 Great Queen street, London, W. C.; price 6d.

Vol. I, June, 1886 to May, 1887, contains 314 pp. and index (iv pp.).

(17.) Camera Club, Proceedings of The.—Monthly, No. 1, for December, 1886. 4to. Printed by Wyman & Sons, and published (for members only) at the Camera Club, 21 Bedford street, Strand, London, W. C.

The first three Nos. consist of 10 pp. each (besides advt. pp). No. 4 has 20 pp. and subsequent Nos. 16 pp. each. Vol. I contains thirteen Nos. (December, 1886, to December, 1887), but subsequent vols. will run with the year.

(18.) CANADIAN JOURNAL OF PHOTOGRAPHY, 1864. Monthly; Toronto, Canada.

(19.) CHARTERHOUSE (THE) PHOTOGRAPHIC ART JOURNAL. Designed to give information on Modern Progress in Photography, to professional and amateur photographers. Quarterly; price 3d. 4to, 16 pp. in each number (including advertisements), illustrated. Published by W. B. Whittingham & Co., Charterhouse square and Grace Church street. This is the organ of the "Photographic Artists' Stores" of 43 Charterhouse square, E. C.

(20.) CHEMICAL (THE) GAZETTE; or, Journal of Practical Chemistry in all its applications to pharmacy, arts and manufactures. Conducted by William Francis and Henry Croft. 8vo. 17 vols. Published, 1842–59.

Continued as

(20 *a.*) CHEMICAL (THE) NEWS *and Journal of Physical Science.* A journal of Practical Chemistry in all its applications to pharmacy, arts and manufactures. Edited by William Crookes, F.R.S. 1860–88.+ Weekly; small 4to. Price 4d. London: 3 Boy Court, Ludgate Hill, E. C.

Thirty years ago Mr. Crookes was one of the first scientific photographers of the day. He has won higher fame as a chemist than could perhaps have been possible to him as a photographer, but he has never forgotten his first love. In the pages of the *Chemical News*, many papers and facts bearing upon photography will be found.

(21.) CHEMICAL SOCIETY, JOURNAL OF THE. Containing the papers read before the society, and abstracts of chemical papers published in other journals; 1841–88.+ 8vo; monthly. Sent to subscribers for 30s. per annum by the publishers, Gurney and Jackson, 1 Paternoster Row, E. C.

Each number contains about 270 pp., and the abstracts include foreign as well as English publications, giving a complete *resume* of chemical science. The editor is C. E. Groves, F.R.S.

(22.) CHEMIST (THE); or, Reporter of chemical Discoveries and Improvements, and Protector of the Rights of the Chemist, and Chemical Manufacturer. Edited by Charles Watt and John Watt. 6 vols., 8vo. London, 1840–45.

Continued as

(22 *a.*) CHEMIST (THE); or, Reporter of Discoveries and Improvements in Analytical, Manufacturing and Agricultural Chemistry. Edited by John Higgs Newton. 1 vol. (vii), 8vo. London, 1846–48.

Continued as

(22 *b.*) CHEMIST (THE); a monthly journal of chemical philosophy and of chemistry, applied to the arts, manufactures, agriculture and medicine, and record of pharmacy. Edited by John and Charles Watt. New series. 4 vols., 8vo. 1849–53.

Continued as

(22 *c.*) CHEMIST (THE). A monthly journal of chemical and physical science. Edited by John and Charles Watt. New series. 5 vols., 8vo 1854–58. London.

It was in *The Chemist* for 1850 and 1851 that Scott-Archer's classical papers on pyrogallic acid, and on the collodion process, appeared.

(23.) CYCLIST (THE); and Bicycling and Tricycling *Trades Review.* Weekly; 4to, 1880–88.+ Edited by Henry Sturmey, and published by Iliffe and Son, 12 Smithford street, Coventry. Price one penny.

The connection between cycling and photography has grown rapidly but steadily, and the ease of conveyance which a machine offers for the carriage of one's "kit" is undeniable. Besides many articles and letters on photography in the ordinary issues, the extra Christman Nos. of the "Cyclist" (price one shilling) have of late years drawn largely on photography—especially the humorous side of the subject. Mr. Sturmey is a devoted "A. P.," and the editor of the very useful "Photographer's Indispensable Hand-book." The ordinary Nos. of the "Cyclist" sometimes run to 100 large pages, which must be about a "record" for a penny weekly.

(*To be continued.*)

ON THE ART VALUE OF THE INSTANTANEOUS FLASH-LIGHT.

BY MR. JOHN BARTLETT.

[Read before the Philadelphia Amateur Photographic Club.]

THERE is so little variety in the character of the illumination employed by photographers, that the productions of one gallery scarcely differ from those of another save in technical qualities.

Certain styles of lighting become popular, from some cause or other, and every operator at once conforms to the prevailing taste, applies the self-same method to every character of face despite the sarcastic remarks of the artist, who relentlessly dubs it "the photographic light."

Occasionally an amateur, possessed of taste, or perhaps constrained by the conditions of light, will produce a novel and beautiful result, to the delight of the artist and to the disgust of the photographer for its lack of technical excellence.

Should fashion or taste demand a certain style of lighting, the photographer is compelled to shift his curtains, cut off the light in one direction, subdue it in another, to obtain the desired result, which of necessity diminishes the quantity of light, prolongs the exposure, and produces a forced and unnatural expression.

With the instantaneous light any variety of illumination may be had simply by shifting the source of light. The most artistic effects can be secured without any labor, expense or increase of time of exposure. While the intensity of the light emanating from burning magnesium is considerably less than that of the sunlight, its actinic energy is about equal to one-fifth the power of the great luminary's rays; consequently the light, though powerful, is soft, and there are no harsh contrasts like those produced by photographs taken in direct sunlight.

Another factor contributing to the ease and beauty of posture in the subject is the abolition of the head-rest. There is no necessity for the sitter to remain immovable; a slight swaying of the head or body cannot possibly be translated, the duration of exposure being less than one-thirtieth of a second.

Direct shadows, so effective in a work of art, have hitherto been excluded from photography; but with the flash-light they contribute much to the beauty of the picture, giving relief, pleasing contrast, and a degree of naturalness which is delightful.

From an artistic point of view we prefer the direct light, unscreened by ground glass or translucent paper. When subdued, the effect is more like daylight work; besides, those beautiful lines of high light along the nose, upon the cheeks and on the forehead, which never appear in daylight photography, are lost.

But little, if any, retouching is necessary, if the light is properly managed.

The shadowed side should be illuminated by reflectors—the ordinary screens of white paper or muslin will answer, but we prefer cardboard or muslin covered with silvered paper, placed at a proper distance from the face.

An effective method of lighting, artistic but not unusual, may be secured by placing the powder to be ignited at an elevation of about seven feet from the floor. A tripod placed upon a table may be used.

The figure should be so placed that a line drawn to it from the base of the stand will make an angle of about forty-five degrees with the line in which the camera is placed.

A reflector of silvered cardboard not only concentrates the light, but also prevents its dissipation in the parts of the room behind it. The shadow will be lower the further the sitter is placed from the background. One peculiarity of the flash-light is the beautiful expression of the eyes—they have a brilliancy unequaled by any other process. With a certain brand of plates (let us here say the most rapid) and a measured quantity of powder, the time of exposure may be accurately estimated; however, it is best to be a little liberal and not too rigidly follow the instructions in the package as to quantity necessary. If the powder is properly compounded, the ignition produces a flash identical in appearance to that of lightning; there should be but little smoke, and that not of a dense kind. The photographic property lies chiefly in the magnesium. The agency of the other compounds is to rapidly supply oxygen.

Avoid, therefore, all preparations which claim to have no magnesium in their composition. If the ingredients are properly balanced, no residue and but little smoke are produced. It is, moreover, possible to compound a powder brilliantly powerful in actinism, so that stops may be used in the lenses, exceedingly rapid in igniting, and yet safe from explosion by ordinary percussion or agitation. Magnesium has a certain orthochromatic value, which may be increased by chemicals which do not diminish its actinic force. We are hopeful of a perfect orthochromatic powder in the near future.

[*From N. Y. Tribune.*]

BRAIN PICTURES: A PHOTO-PHYSIOLOGICAL DISCOVERY.—IS THE BRAIN A RECORDING CAMERA? A FROZEN SLICE FROM THE CRANIUM OF A DEAD SCIENTIST REVEALS WONDERFUL THINGS.

BY GEO. G. ROCKWOOD.

Several years ago the scientific world was startled by the result of a series of experiments made to test the theory that for a brief interval the eye retains upon its retina the last object on which it rested in life—in other words, that a species of photograph is made upon that organ which, if quickly examined with a magnifying lens, may be plainly identified. It was alleged that an assassin had been convicted in France on the strength of the evidence thus obtained, the image of the murderer having been found impressed upon the eye of his victim while the latter was in the act of being struck down by the murderer's weapon.

Owing to the many impediments in the way of killing people for the mere purpose of adding to the store of human knowledge, but little advance has been made in the development of this curious thought, and until some one unselfishly volunteers to be experimented upon for the benefit of science, it is not likely that much progress will be made in such a difficult field of research.

Some fifteen years ago, while occupying my old establishment on Broadway, I frequently observed a gentleman, apparently fifty-five or sixty years of age, with a tall, erect figure and a distinguished air. His features were regular and strikingly handsome, and he wore a flowing beard that once had been black, but now was beginning to show the frost of time. Evidently he was a foreigner, and I judged him to be a man of noble birth and high culture. His movements were full of dignity, while his face showed the resigned expression of one who had suffered either from a blighted ambition or a hopeless love.

As he always walked alone seemingly buried in reflection, I could contrive no plan of "getting at him," so to speak, until one day he stopped for a moment in front of an excavation that was being made in front of the old Roosevelt property on the corner of Fourteenth street and Broadway, now the site of the Domestic Building. I happened to be passing at the time, and also paused in order to more closely observe the mysterious stranger. At this juncture an acquaintance tapped me on the shoulder and said, "Why, Rockwood, you seem to be very much interested in the old Count yonder—do you know him?" "No, I do not," I replied, "and was just wondering who and what he is." "Well, join me at lunch and I will tell you; it's rather an interesting story." It being an idle hour with me, I accepted my friend's invitation, and he then related these curious particulars:

The Count Borenski was formerly a professor of languages in the College of Arts and Sciences in Munich. At an early age he developed a marvelous gift in the acquisition of languages, and before he was thirty-five had successfully supplemented the discoveries and labors of Champolion in the interpretation of many of the ancient hieroglyphics and symbols that had previously baffled the skill of the great students of philology. But, as is sometimes the fate even of the most practical and scientific men, the Count met and fell in love with a young German girl. He proposed marriage, but was refused by the parents on the ground that as the father and brothers of the maiden were soldiers, and had been so for generations, her road to Hymen must likewise be "the path to glory." In short, she must wed only a soldier. In hot blood the Count wrote a letter to the farther which so incensed the family that one of the sons replied with a challenge. A duel resulted, and the eldest brother of the girl was left dead on the field or severely wounded. The Count resigned his professorship, abandoned the scene of his literary work and came to the United States, where he lives upon a moderate income from an estate left him in his native land, and he is now devoting himself to the study of Egyptology. Such was my friend's story.

Of course I became more interested than ever in my "Broadway character." After a while I noticed that the Count began to show the ravages of time. He was losing his erect and elastic step, and as recently as three years ago it was painful to observe how old age had fairly overtaken him and he had become decrepit, and with bent form and locks grown white and long he tottered by on his daily walk, bearing his weight upon a staff. After this I saw him rarely and finally not at all. In the thronging events of New York life one has little time to linger on the past, and too often we disregard the future. However, that's an aside.

My hero and his history passed from mind until a short time ago, when I was sent for by Professor Black, of the Bellevue Hospital for Aged Men, on Manhattan Boulevard. "Come in person," he wrote, "as I have a case in which you will probably be interested." On reaching the dormitory of which the professor had charge, I was surprised to learn that my missing friend, the Count, had just passed away. The doctor knew but little of his history and desired to send a photograph to his surviving relatives as collateral evidence of his death. After the negatives were made, the doctor remarked that such singular complications had manifested themselves during the illness of the Count, especially in the cerebral region, that he proposed to hold an autopsy, and at his invitation I remained.

The brain has always been to me the most interesting organ of the human body, and this I thought would be a good opportunity to observe whether a life devoted to study would in any way affect its material or structure. I felt sure there must be such a thing as growth, and I knew of many instances in which the brain or portions of it had been increased in size by culture. Besides, an examination in the present case might determine something for or against the theories of the phrenologists.

In order that the face should not appear disfigured at the funeral, an incision was begun at a point immediately posterior to the superior angle of the auricle, and carried directly over the vertex to a similar point on the opposite side. The scalp was then deflected to the supra-orbital arches anteriorly, and to the occipital protuberance posteriorly. The skull cap was removed by sawing through the external table, beginning the section in front, about an inch above the margin of the orbit and extending it behind to a level with the occipital protuberance. The internal table was then broken with a chisel and hammer and the skull cap pried off. The cranial nerves and spinal cord were then severed and the brain removed with its three investing membranes, viz.: the dura mater, arachnoid and pia mater. There was something peculiar in the appearance of the dura mater. The sac of the arachnoid contained a little bloody serum. The pia mater was normal. On removing these the surface of the brain proper was exposed. The general appearance of the cerebrum was likewise normal, the convolutions not being remarkable except at one point. The inferior portion of the ascending frontal convolution of the left side was very prominent, bulging in such a manner as to form a decided protuberance. Advanced physiologists allege that the controlling center of speech is located in part, if not wholly, at this point; and it has been demonstrated by Dax, Broca, Ferrier and others, that it is this portion of the brain, if any, which governs the faculty of speech. This part, when pressed upon by a tumor or subjected to violence, causes aphaisia or the prevention or perversion of the articulate language. On opening the brain, it was found that the projection was caused entirely by an increase in the gray or vesicular matter, which was much thickened at this point. The rest of the cerebrum was normal in every particular.

The cerebrum is composed of two materials, a white substance or conducting material and a gray substance which is supposed to be the seat of reason and thought. The gray material is on the outside like a shell; hence it is the cortical portion. Its thickness would indicate unusual activity of language. It is composed of cells. Some are spherical, others with one process are called unipolar; those with two processes are called bipolar, and those with three, tripolar, while others with an indefinite number of processes are called multipolar.

In the rest of the brain these cells, seen under the microscope, were perfectly normal, but in this one locality they were curiously distorted. At my request, the doctor gave me a portion of the substance, which I immediately froze. Subsequently, with a fine razor, I successfully planed off a number of thin laminæ for microscopic examination. The instrument used was the one I had recently secured from Dr. J. W. S. Arnold, the distinguished microscopist, and with which he had made a large number of excellent photo-micrographs. Several scientific experts joined me in the examination of the portions of the brain which had been prepared. With a low power we discovered that there was a peculiar laminated structure to the tissue, whereupon I planed off a little more of it in the direction of the laminations or strata, the first having been transverse or across these layers.

And now was presented a mystery. Curious markings which my friends declared did not belong to the ordinary structure were plainly seen. Some were geometrical, some sinuous, others wavy, and all to a greater or less degree crossed each other. We now applied a higher power and secured a magnification of about 600 diameters. This still further increased the mystery. The markings assumed a more definite form and seemed continuous, as if a part of a picture or design; a series of pot-hook shaped figures commingled with what appeared to our surprised vision to be Chinese characters or Egyptian hieroglyphics, all involved in a sinuous, vermiform-like mass.

My first step was to secure a photo-micrograph upon a sensitive and delicately prepared plate. Then I determined to subject this plate to further magnification or enlargement. But now came the difficulty of enlarging the picture already made, because the deposit of bromide of silver, when magnified, complicated the images found in the brain tissues. Finally, this was overcome by preparing upon an (optical) plane surface of glass a sensitive coating of albumen which was absolutely structureless, and gave an image free from all stria and imperfection. By the use of an objective of a very high power we now had an amplification of 3,000 diameters of the original. This gave on our plate a few complete characters that were the wonder of every person present.

Fully convinced that the figures were not of a generally recognized physiological character, I timidly suggested to some of my scientific friends that they might be symbols. One of them, a learned man who had been for years in the East a teacher and missionary, and who is withal a philologist of experience, said, "Yes, they are strangely familiar." When informed of the nature of the specimen under examination and told that it was a portion of the brain of a human being who in life was distinguished for his linguistic attainments, his astonishment knew no bounds. Looking at them still more closely, he then assured us that the images so unintelligible to ordinary eyes were in truth characters in the Ethiopic, ancient Syriac and Phœnician languages. He pointed out the differences between them, and as far as he could do so, gave their names and meaning, and in brief so fully identified them as to remove all suspicion of a merely accidental coincidence. Naturally the minuteness of the microscopic field prevented intelligent combinations, for the tracery was so complex, irregular and involved as to forbid the hope of unraveling by any means now known the tangled records of thought, if such they were, so manifestly inscribed upon that bit of brain.

If anything practical shall result from this discovery—if, for instance, future literary executors shall be able to extract from the distinguished dead posthumous poems, suppressed opinions, the contents of "burned letters," family secrets or the mysteries of life that are buried—it will be a truly remarkable achievement of science; but whole lives of patient experiment and profound study must be expended upon a perplexing field of investigation before such a marvelous result can be attained. My own business claims too much of my time to permit me to give the mysterious subject the attention it requires, but now that I have suggested its possibilities, there are without doubt others who will eagerly explore this hitherto unknown realm.

17 Union Square, New York, December 28, 1887.

[*From the Philadelphia Photographer.*]

CHARACTERISTICS OF DRY PLATES.

BY SODIUM.

It is said that there is even a limit to the power of Omnipotence.

To those who have been educated into the belief that "there is nothing impossible" to man, that there is nothing good or great which persistent and well directed effort will not accomplish, this saying might appear to require qualification.

To others, who know the insignificance of all human effort when compared with the stupendous energies of nature, the saying will appear to be perhaps blasphemous. However it may be accepted by the one or the other, the statement itself might well excite within each one of us a desire to stop and think of it, and inquire what may be observed in nature that would give rise to such a thought. Is it because we observe that natural laws are most logical and consequent, and that there is nothing erratic in all her wide domain, that we dare to say that anything is impossible to nature or to nature's God? Or is it that while we contemplate the infinite variety that crowds upon our vision at morning, noon, or at night, that even two blades of grass were never seen to be alike by day, nor two clouds of the same shape by day or night, that we shall say, because such things are not, Omnipotence cannot produce them.

However this may strike the reverent or irreverent mind, the fact remains that in nature infinite variety is the rule. And that among the works of man the closest study of detail, and the minutest care in construction, will fail to produce any two things of the same kind exactly alike.

Let us carry this inquiry into the domains of photography, and see what conditions obtain in the wonderful art-science in which we are so particularly interested. There are many photographers who act as if they thought that all the different makes of dry plates are alike, but how far from the truth this may be should be plain to any person who, having the ability to develop a dry plate, had ever used two or more of the different brands. The universal use of the dry plate, and the wonderful advance in photographic art consequent on that use, renders an intimate knowledge of the qualities of the various makes of dry plates, and a no less intimate knowledge of the best methods for their handling and treatment in exposure and development, of the very first importance to every photographer. This knowledge comes to the observing operator in time, but the duration of that time will depend largely on the amount and variety of photographic work he will be called on to do, and to his capacity for correctly deducing from the various phenomena which come under his daily observation in the use of dry plates, the peculiar qualities or characteristics of each particular make or "brand" of plates, and the more constant laws which govern their development when properly exposed, as well as the various modifications of development which shall make these peculiar qualities of plates subservient to his will and judgment in the production of a high grade of work.

The possession of this knowledge must be of inestimable value to every practical photographer. And if so, then it would be incumbent on those whose opportunities for acquiring this knowledge by practical study are limited, to supplement what they have learned by availing themselves of the experience of those more favorably situated.

The photographic journals of the day are filled with accounts of the experiments of men who have ample time to study, and who are ever ready to promote the advancement of others by freely giving them the fruit of their labors; but, unfortunately, the very individuals who would be most benefited by such instruction are the least likely to avail themselves of it. This is a fact greatly to be deplored, and it is equally to be regretted that something cannot be done to awaken in the minds of a great number of practical photographic workers a keener inquiry into the mysteries of the profession, and a desire for a more extended acquaintance with what is going on in the photographic world, which would prompt them to take and carefully peruse not one, but many of the useful journals which are published in the interest of our art.

The individual characteristics of the several "brands" of dry plates alone would, if fully inquired into and set forth, afford interesting as well as instructive reading matter for all, at this stage of our progress in their use and acquaintance with their peculiarities.

The dissemination of information on this particular subject, however, has fallen into the hands of a more active agency even than the journal; I mean the demonstrator, to whom is due the credit of having brought the dry plate into universal use, and to whose active intelligence and untiring industry may be attributed the rapid advancement in our art acknowledged to have been achieved during the last few years.

The demonstrator is now a welcome visitor to almost every photographic studio in our country, and properly so, for he always has some valuable information to impart. Of course, he is full of all valuable knowledge concerning his own plate. If he is a "Cramer man" he will enlarge on the great advantages of such a rapid plate, and how useful the yellow prussiate is in helping to coax a little additional strength or intensity into it; and he will tell you with charming candor, that while it is slow in the fixing solution, yet that is an operation that does not need to be hastened, and therefore the fact is not detrimental to the plate. And, although it takes twice as much pyro to develop as any other plate, observe what charmingly artistic qualities you get, sometimes.

When, however, it is a "Seed man" who visits the gallery, he very pleasantly informs you that his plate is so easy to work, and that it is a very quick plate, too, in fact, quick enough for any purpose, but it is so easy to work; why, it develops in a very short time, and fixes also very quickly, in fact anybody can use it, it is so easy to work. And then he will sit you and try to make you a good negative!

It may not be long after this when a big, burly, but fine-looking man comes in, and is anxious to sell you some Eagle plates. Why, the Eagle plate is made by that father of dry plates in this country, and who ought to make a better plate than Norden; it was he who made the emulsion for the famous Cramer & Norden plate, and from which same formula the Cramer plate is now made. And the Norden plate, and the St. Louis plate, were they not all fine, and is not the Eagle plate the best of all? Come, now, I will sell you a gross, between you and I, for such a price. Have a cigar?

Then there is another demonstrator, a rather thick-set man, of light complexion, he will come in and frankly tell you that he is *the* demonstrator for the Stanley dry plate, and very politely ask you if he may talk dry plates to you. Well, he looks as if he knew something, and he tells you his name, and you recollect the name as of some one who had made a reputation in photography and you invite him to take a seat.

The first thing you are asked is "What is your favorite plate? what are you, using?" Then he goes on to tell you that the Stanley plate is the most useful plate to be had, for three reasons: The first, and most important, is that it holds all its developed intensity or strength in the fixing solution, in the same manner and to the same degree as a collodion plate would. In the second place, all emulsions are of the same rapidity and quality. In the third place, the plate is coated by a machine, and in such a manner that the coatings are absolutely even and uniform, and that these three qualities, which are peculiar to the Stanley plate alone, render it the most reliable plate of all the list, and by the use of which it is possible to make a more even and regular grade of negatives than by any other. And then, to sum up its perfection, he will say that while it is the most rapid of all the easy working plates, developing and fixing as quickly as the Seed, it will give you the higher artistic qualities claimed for the Cramer; and you are informed that he is prepared to show by actual demonstration that the Stanley plate possesses all these qualities and perfections.

It will be understood, of course, that every demonstrator would make you believe, if he could, that his plate is the best; not only that, but each one possesses the best developer, and as the future improvement of dry plate work lies in the development, this subject becomes of increasing importance.

It would not be of advantage to give the various formulas that are advocated by the different plate makers. Suffice it to say that the simplest form of alkaline pyro development has the more general indorsement of photographic experts; and of all the alkalies, soda seems to give the most satisfaction.

There are two principal methods of preparing the soda developer, one is made up in bulk, the other is concentrated of the two methods; an example is given:

THE STANLEY FORMULA.

No. 1.

Water (ice or distilled)	80 ounces.
Sulphuric acid, c.p.	10 drops.
Pyro	1 ounce.

No. 2.

Sulphite of soda, crystals	6 ounces.
Sal soda, crystals	6 "
Water	80 "

Use equal parts without additional water.

CONCENTRATED SODA DEVELOPER.

No. 1.

Water (distilled)	5 ounces.
Sulphuric acid, c.p	5 drops.
Pyro	1 ounce.

No. 2.

Saturated solution, sal soda	6 ounces.
Saturated solution, sulphite of soda	6 "

In 12 ounce bottle.

To use for 8 x 10 plate, or lesser:

No. 1	½ drachm.
No. 2	1 "
Water	3 ounces.

[*From Proceedings of the Photographic Society of Edinburgh.*]

THE CAMERA AND ITS IMPROVEMENTS.

BY G. G. MITCHELL.

IF some one well informed on the subject would write a descriptive paper giving a general idea of the principal improvements on the camera introduced within the last ten years or so without any suspicion of puffing particular makers or patents, he might do the photographic world considerable service. Nearly the whole of these improvements or modifications, I presume, claim to be the subjects of patents; but it might be a useless labor, and not by any means worth the pains required, to describe very many of them, for it is only too apparent that hundreds never get beyond their author's approbation, and remain in cold neglect, forgotten either from want of original merit, or because their object is already sufficiently attained by existing apparatus.

The claims of rival makers are constantly pushed before us; but without having the actual apparatus in hand to examine, it is a matter of considerable difficulty to determine from mere wood-cuts and advertisement descriptions which is the instrument we should prefer as best suited for our particular wants.

In a general way there is a strong family likeness between the cameras of all the leading makers so far as principles of construction are concerned. It is in matters of detail and compactness of arrangement where striking and sometimes very important divergencies are found, and it is chiefly in determining the comparative value and usefulness of these competing movements and arrangements that the purchaser finds himself hesitating to come to a speedy conclusion. Many have become possessors of a dozen of lenses, but few indeed have purchased a dozen different cameras. The camera, for obvious reasons, is not known therefore to the same extent as the lens.

I am not qualified to write the paper which I have suggested, but would simply make a few observations on what I consider are some of the requirements of a good camera for outdoor work, the result of observation and what experience I have had in the field, and also notice some of its modern improvements.

In the first place it seems to me that a good camera should be, so to speak, one and indivisible. It should have no loose parts, no loose screws, nor struts, nor base-boards, nor, in fact, anything whatever which does not belong to it as a camera proper. A photographer has ample to do when he gives his undivided attention to making a good picture, let alone burdening himself at every remove with anxiety lest he should leave this or that indispensable adjunct behind him. Loose parts mean annoyance and possible disaster. The camera made up in that way will almost certainly be a source of grief some time or other to its owner, who will probably one day come within an inch of hastily separating it into more loose parts still. Having been badly bitten in my time, I speak feelingly. There is no excuse whatever now for an ordinary camera not being made self-contained when it is wanted; and if a maker is unable at this time of day to make it so, he must risk his customers occasionally confounding him and all his works. When there are no loose parts we lift the apparatus for an outing with a confidence and freedom from care which immensely adds to the pleasure of using it. It goes without saying that a camera should be as light as possible when it has to be carried now and again for a mile or two, but strength need not be unduly sacrificed to this, else its use in the field will be short-lived. Much must always be left to the taste of the individual, but unless some very special advantage attends the full-sized front, it would only seem sensible to adopt the conical bellows, with its attendant diminution of bulk.

A camera with a multiplicity of swing and other movements is probably a very ingenious invention, but it may be actually of less value to its possessor than one with a few useful movements. Every good camera is now made with a swing back, though few really make use of it, which is perhaps fortunate in one respect, for, as a writer has recently argued, it should almost never be brought into play except in a lateral direction, wherein indeed lies its most legitimate use. The camera should be planted square and plumb upon its tripod, and the front raised if need be, not tilted up, but slid up when required, and in the great majority of cases it is so required, though the fact is little appreciated; and it is a question whether landscape lenses should not always be placed slightly over the center of the front as their normal position. A bellows should rack out sufficiently for a long focus lens, and collapse in such a manner as to suit one of short focus without having any portion of the extension frame in front intruded into the field of view.

The screw form of adjustment is good, but slow when no other way is afforded of obtaining extension. There should be a quick and easy way of drawing out the bellows to rough adjustment, and then a means be offered for final focusing. A contrivance for this purpose, which can be operated by the right hand at the right side, I think more convenient than screw adjustment only at the middle of the back. A double rack and pinion has been found in the practice of some neither so lasting nor efficient as a strong single rack in the center of base-board. With two racks the pinion is occasionally liable to jump over one or other of them and get out of order. The less tail-board any adjustment shows the better, because it is always more or less in the way when focusing, and when large requires the operator to assume a ridiculous position sideways, enough to give him a crick in the neck.

The focusing screen is a sad necessity, so long as it must be of glass. If a flexible screen, or other substitute, could be found to fill its place successfully, the sooner such a brittle and obtrusive appendage, requiring so much care, is dispensed with, the better. The fear of damage to it is always present, and the consequences of a complete smash quite a disaster in some circumstances. When it is broken, without any means of replacing it being at hand, I would suggest a way out of the difficulty, which I do not recollect observing any one has recommended hitherto: Devote a sensitive plate to the purpose. It will be found an indifferent makeshift, but will perform the work in most cases quite long enough till proper help is found. It gradually darkens into a slate hue, but not so rapidly as to prevent its repeated use before that comes on. With a little ingenuity it can be fixed in position in the empty screen frame.

A loose focusing screen is an intolerable nuisance. In practice it has commonly to be laid upon the ground near the operator, and unless its exact whereabouts is constantly borne in mind, it is liable to be trod upon. In such a case the safest place for it is within the tripod feet, but it should not be loose, at any rate up to 12 x 10 sizes, or even larger. A recent improvement, by which the screen is simply moved outwards an inch or two, and partly aside, in a lateral position, is perhaps the best solution yet offered of what to do with the focusing glass. In this position it also offers least surface to the wind.

A camera that must be turned upon its side in order to expose a plate lengthwise is behind the times. Either the revolving or reversing back is a great improvement. The change is made in a second, and the apparatus remains steady, which is rarely the case when turned on side.

A camera should not only be of one piece, but it should admit of being speedily set up and taken down. If a deal of trouble be involved in making exposures a large percentage of the pleasure is destroyed. When we have got over the necessity for putting a number of parts together, there still remain two operations which promise to see the present generation out, viz., erecting the tripod and screwing the camera on to it, after which the lens has generally to be screwed into its place with an equal amount of fumbling. Why must the camera continue to be screwed to the triangle, and in the most awkward way imaginable, with all the leverage thrown upon one screw? Why should it not be placed with one movement into some slot or other arrangement, and held there firmly, being as easily released when required. But why should there be a triangle at all? Should not each camera base contain its own means of securing the tripod legs? They are trouble enough in themselves without adding to that by bothering with a separate triangle, one of the most ungainly things to pack and look after that can be imagined. It is somewhat unfortunate that the *impedimenta* of the photographer are rather difficult to make a compact burden of. The camera itself is compact enough, but the stand defies apparently all attempts to accommodate it otherwise than in a separate way, and the lens also usually requires special carrying attentions. Some cameras in the market now dispense with the tripod head, but much has to be done in the direction of increased portability.

The diaphragms, when not revolving, are another nuisance, especially when supplied all separate in their neat leather case. The case gets into one pocket, and the diaphragms wander into all others, the particular one wanted being always the most difficult to find. The first thing a sensible man should do is to rivet all his loose diaphragms together by the finger tags, so that he can freely turn around the one he wants. In this way he will never lose one without losing the lot, and that he may do easily enough. I do not want to puff any particular appliance, but the Iris diaphragm seems so complete a remedy for all diaphragm troubles that something like it will probably supersede the present primitive style of things; besides, it offers no slit through which light may pass.

The double back is perhaps as well and conveniently made as it can be, but I cannot help inclining to the opinion that a double dark slide should not be fed by opening in two halves book form. However close fitting it be at first, such a back is liable to warp and show a weak spot at the division, in spite of being well clasped. A back that is made solid in its outer framework, and fed from one side while the door is drawn, I maintain is the safest form, the simplest, the lightest, and should be the cheapest. No back should be made to slide into position on the camera, which it is most annoying to find is being moved by the effort to force the slide into place. It should merely be laid to, and simply, but firmly, clamped.

Any invention which would happily reduce the necessity for carrying so many slides, and at the same time supply an equally convenient means of exposure would be welcome. The ordinary double back, notwithstanding the formidable rivalry of the new roll holder, is still the most suitable to use when moving objects are in question, because exposures can be made more rapidly in succession, but otherwise the holder is a distinct advance, and has a sure future before it. Its merits are so obvious that comment is superfluous. A certain and visible means of knowing when the required length of paper is unwound, and an unmistakable indication of some sort on the paper itself between the exposures, should be considered essential. A very quick wind off may never be desirable, because of the danger of ruffling the paper.

One more remark. Every one should take at least two lenses with him when he goes afield, say one of 6 and one of 10-inch focus, and an adapter for the smaller size. He will find this very useful, and be enabled to bring home pictures which with one lens he could not possibly possess, because a composition which is beautiful for a 6 or 7-inch may be impossible for a 10-inch, and *vice versa*. We have not yet got the lens that will do everything, any more than the camera which will do all it ought to do. The former is an impossibility, but the latter can be imagined, and probably will appear some day.

All communications for the columns of the BULLETIN *should reach us by Monday preceding the day of issue, to insure their publication at that time.*

OBITUARY

A. M. WARNER.

THROUGH our good friend Mr. E. Long we have just learned of the decease of Mr. A. M. WARNER, one of the veteran photographers of Quincy, Ill. The respect in which he was held by his fellow-citizens is well shown in the resolutions adopted at a special meeting of the photographers of Quincy, called to pay tribute to his memory on learning of his demise:

"At a meeting of the photographers of the city, held yesterday, the following resolutions were unanimously adopted:

"*Whereas,* Our kind and Heavenly Father has seen best to take from us and transplant in the land of purer light and brighter skies our esteemed co-worker, Mr. A. M. Warner; therefore,

"*Resolved,* That in him we have lost an earnest co-worker, kind friend, genial companion and an honest man.

"*Resolved,* That we extend to his bereaved family our kind sympathy.

"*Resolved,* That as a mark of respect we attend the funeral services in a body.

"*Resolved,* That a copy of these resolutions be published in the city papers."

OUR ILLUSTRATION.

THE pretty study that we give as an illustration with this issue of the BULLETIN is from the studio of W. G. C. Kimball, of Concord, New Hampshire. There are few, if any, photographs that can surpass these examples of the art from our Eastern friend. There is a delightfully artistic feeling in the posing of the figure, there is excellent management in the lighting, and a brilliancy and vigor about the printing that make these pictures some of the best examples of photographic study that we have been able to secure. Our thanks are due Mr. Kimball for the care he has bestowed upon these illustrations.

◆

SPEAKING of the preparation of the large number of prints necessary for an issue of our journal, Mr. Kimball writes: "January is a hard month for printing; the thermometer has been from five to twenty degrees below zero most of the time, a severe test for the albumen paper. Our printing room has been inundated once, spoiling two or three of the negatives selected. The negatives were made with a 3 A Dallmeyer lens, and the prints on N. P. A. extra brilliant paper."

◆

ROCKWOOD'S TRIPLEX PORTRAITS.

Not a Patent!

NEW YORK, February 1, 1888.

To the Editors of the BULLETIN.

I am in receipt of many letters asking my "price for room rights," etc., for my little novelty, the "Triplex Portraits." I have not patented it, and I make no charge for its use. In order to cover the expense of printing the instructions and the illustrations I like to send four examples with the instructions at a cost of $2. The amount being inclosed by post office or express order, with request to send.

Yours very truly,

GEORGE G. ROCKWOOD.

ANTHONY'S
Photographic Bulletin.

EDITED BY
Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.,
and a corps of practical assistants.

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Advertisements should reach us not later than the Saturday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, six, twelve or twenty-four issues.

E. & H. T. ANTHONY & CO., Publishers.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

INFORMAL MEETING, JANUARY 18, 1888.

Vice-President J. B. Gardner in the chair.

Mr. Ehrmann introduced the subject of photo-process methods for illustrating catalogues and magazines, gave a brief outline of how such pictures were made and their relative excellence. This subject was further explained and illustrated by Messrs. Kittredge, Flandermeyer and Gardner, and by Drs. Miller and Mason. This naturally led to a discussion concerning the best lenses to be used for this kind of work; and the following makers were all highly recommended: Dallmeyer, Steinheil and Hermargis; and, where cost was not to be considered, they were to be preferred above all others. There were a number of other makers mentioned as having turned out unexceptionally good lenses, and for many photographic purposes might be safely recommended. The comparative value of single and double lenses was also discussed, but a preference was given to the latter by the majority of those who spoke on this subject; though all agreed that the single lens for some few purposes might produce quite as satisfactory results.

Mr. Cornelius Van Brunt then introduced the subject of measuring the rapidity of shutter exposers by means of a tuning-fork. This was intelligently explained to those present; but it was thought by some that the tuning-fork was no improvement on Dr. Higgins' pendulum method, and for some reasons was not as available to a large class of photographers. This led to some talk as to the smallest fraction of a second that had been accurately measured; and it was asserted by Drs. Miller and Mason that if some of the reports were true (and they appeared to be from very good authorities), that the two-hundredth of a second or less had been noted by several experimentalists. The appliances to accomplish this, however, were of a very special character, and were not likely to be utilized except by a few engaged in what has been commonly called instantaneous work.

Mr. H. G. Brogfeldt then exhibited examples of flash light pictures and gave a detailed explanation of the compound employed and the method of using it. These pictures were regarded by all present as being quite equal to the best brought to the notice of the section; and in respect to artistic effects in light and shade, compared favorably with first-class work made by the ordinary methods under the skylight. In fact, they so far resembled such work, that perhaps one in a thousand only would mistrust they were taken by the method described. The critical examination of these pictures and the eulogies they received, greatly lessened the belief of some present, that the flash-light is only a toy to be played with, and that it can never be of the slightest practical value.

As the section was well represented by doctors it was perfectly natural that the medicinal effects of chemicals used in photography should come in for a share of attention, and to this end Dr. Miller filled up the remaining portion of the evening with entertaining incidents relating to this special phase of the art. The company then bid each other a kind good-night, and retired to dream over the enjoyment of a social evening with the scientists.

◆

THE ONE THING.—He (with deep passion)—Oh, Geraldine, my darling, I love you so. I love you so. Be mine, dearest, be mine.

She (with suppressed emotion)—Oh, Harold, you are so sudden; I must have time to ——

He (unguardedly)—Don't mention it, darling. Time is nothing; money's the thing, and you've got plenty.—*Washington Critic.*

G. M. CARLISLE in Account with the PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

Dr.

1887.			
Jan.	1.	To cash balance from 1886	$2,528 57
	14.	Received from H. McMichael	90
August	15.	" " 515 members, $2.00 each	1,030 00
		" " 366 members, $5.00 each	1,830 00
		" " H. S. Bellsmith	1,453 25
	16.	" " "	200 00
		" for admissions, 25 cents each	587 25
Sept.	20.	" from H. S. Bellsmith	231 75
Dec.	27.	" " "	666 95
			$8,528 67

Cr.

1887.			
Feb.	1.	Paid draft, No. 1, H. McMichael	$53 65
		" " 2, D. R. Clark	31 50
		" " 3, W. V. Ranger	71 15
		" " 4, W. H. Potter	31 45
		" " 5, J. Landy	40 00
	17.	" " 6, Printing and stationery	69 10
		" " 7, G. M. Carlisle	91 50
May	26.	" " 8, C. Gentile, expense account	238 10
June	6.	" " 9, " "	110 00
		" " 10, P. W. Rounds, badges	150 00
July	28.	" " 11, W. H. Potter, medals	905 00
	30.	" " 12, P. W. Rounds, workmen's badges	2 75
August	8.	" " 13, C. Gentile, expense account	100 00
		" " 14, H. S. Bellsmith "	100 00
	13.	" " 15, J. L. Pierce, rent of hall	293 62
		" " 16, C. Gentile, salary	250 00
		" " 17, " expense account	600 00
		" " 18, J. Landy, "	42 50
		" " 19, W. V. Ranger, "	86 00
		" " 20, H. S. Bellsmith, "	88 26
		" " 21, C. Gentile "	650 00
		" " 22, H. E. Carson, stenographer	120 00
		" " 23, G. M. Carlisle, expense	100 00
		" " 24, G. Genert, foreign exhibit expense	19 43
		" " 25, G. M. Carlisle, expense	11 00
Sept.	15.	" " 26, Jex Bardwell	100 00
	29.	" " 27, W. H. Potter, medal account	95 00
Dec.	27.	" " 28, H. S. Bellsmith, expense account	100 00
		" " 29, " 5 per cent	300 00
		" " 30, G. M. Carlisle, "	300 00
		Paid for Type-writing	11 00
		" Express	3 55
		" Exchange on five drafts	1 25
		" Telegraphing	1 40
		" Bottle mucilage and package large envelopes	30
		" Clerk hire, folding, directing, stamping and mailing 1,000 circulars.	10 00
		" Rubber stamp	75
		" Year's postage	24 00
			$5,202 61
		Cash in bank	3,326 06
			$8,528 67

G. M. CARLISLE'S STATEMENT—*Continued.*

RECAPITULATION.

Received for initiation and dues	$2,860 00
" " floor space	2,551 95
" " public admission	587 25
Total receipts, 1887	$5,999 20
Total expenditures, 1887	5,202 61
Net gain, 1887	$ 796 57
Cash on deposit, December 31, 1887	2,528 57
Received from H McMichael, balance	90
Cash now on deposit	$3,326 06

PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

Local Secretary of P. A. of A.'s Report for 1887.

Disbursements.

May 24—	Bills rendered for sundry expenses, including cost of incorporation, printing 15,000 circulars, tubes, diagrams, etc		$238 10
	Postage stamps for 15,000 circulars, in tubes		110 00
Aug. 13—	Paid T. Dailey, cleaning Exposition Building, 6 days		65 00
"	P. Muller, decorating stage with ornaments, flowers, etc		25 00
"	Stienmetz & Eilenberg, use of stage built for Thomas Concert Company		60 00
"	Coleman and wife, 6 days in charge of toilet rooms		15 00
"	Music on day of public admission		100 00
"	Gas bills for every night and two evenings		93 25
"	Police from Aug. 5 to 13		129 00
"	E. Moore, carpenter, rent of tables and screens	$100 00	
"	" carpenter work in various parts of building,	150 00	250 00
"	Printing programmes, admission tickets, constitutions, etc		29 25
"	H. L. Blakelee, managing sale of tickets, public day		20 00
"	Andrews & Co., for use of desks		62 50
"	H. E. Morton, signs inside and out of building, and for journals, etc.		145 00
"	Milward Adams, for use of trees decorating hall		35 00
"	Watchman in Academy of Sciences, 4 days		7 00
"	W. Leonard, janitor in Art Department (antique statuary)		8 00
"	Chicago Arc Light & Power Co., electric light		14 00
"	Ford, Johnson & Co., use of chairs		17 50
"	C. Brown, removing booths, ptatforms, etc		39 00
"	Advertising, public day—The *Chicago Times*	$48 00	
"	" " *Chicago Herald*	15 75	
"	" " The *Tribune Co*	30 50	
"	" " *Inter-Ocean*	28 00	122 25
"	Local Secretary, amount allowed by Executive Committee		250 00
"	Expenses paid help, mailing and folding 15,000 circulars		26 50
"	Printing letter heads and envelopes for Railroad Committee		10 00
"	Cloth for covering screens in Exposition		35 00
"	Laborers, assisting in putting up pictures and repacking		24 50
"	Telegrams, $1.30; marking dealers' space on floor, $6.00		7 30
"	G. Daniels, janitor at Exposition, services looking after and receiving packages before and at Convention		5 00
"	Clean towels and screw-eyes		1 75
"	Freight on American and German exhibits		11 05
"	Stationery, $2.00; express wagons, $3.50		5 50
"	Packing and shipping pictures		12 50
"	G. A. Douglass, expenses Railroad Committee, freight, etc.		11 59
"	Postage stamps for correspondence during the year		6 75
			$1,992 29
Cr.	By cash received from Treasurer Carlisle		1,948 00
	Balance		$ 44 29

PHILADELPHIA AMATEUR PHOTOGRAPHIC CLUB.

THE monthly meeting of the Philadelphia Amateur Photographic Club took place on January 16th, 1888.

President HAINES called the meeting to order at 8.30 P.M. and introduced Mr. John Bartlett, who read a paper on the "Art Value of the Instantaneous Flash-light (see page 75). The paper was exceedingly interesting to the members of the club, and after its reading Mr. Bartlett exhibited a number of lantern slides made from his negatives taken by the flash-light. The pictures, especially of groups, were very fine and splendidly lighted, and certainly showed pleasing effects wanting in daylight work.

ALFRED THOMPSON,
Secretary.

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

ANNUAL MEETING.

(*Continued.*)

Gentlemen: You have again accorded me the privilege of thanking you for the partiality shown in electing me to the Presidential office of the society—a compliment which affords me great pleasure.

It is gratifying to feel assured of our continued prosperity, of our increased number of members, of the excellent work produced by our ardent, interested, intelligent workers in the beautiful, and yearly becoming more and more wonderful pursuit which engrosses us all and gives name to our society.

The statistics contained in the annual reports of the Executive and other Committees, and of the Treasurer, will furnish detailed information in regard to the numbers of our members, our financial status and business matters, which will, I know, interest you all, and make it unnecessary for me to repeat any part of them here.

Before a membership so generally well informed on all that pertains to photography, and with the advantages furnished by our excellent special library, it would be a work of supererogation should I attempt to recapitulate the important new processes or improvements brought forth during the past year.

Constant improvement is being effected in the quality, facility of making, and consequent cheapness of reproductions of photographs for book illustration.

And as an adjunct, isochromatic methods have claimed much attention, their application being of such obvious advantage in producing properly balanced copies of highly colored paintings for the reproduction in permanent inks of fine art work.

Of the recently proposed use of several new reagents as developers I need say nothing, as they have been experimented upon pretty freely by the members of our society and others, apparently (at least for some purposes) with success.

I cannot pass on without reference to the fact of the society having so pleasantly celebrated the twenty-fifth anniversary of its organization. Much may be said of the want of stability in silver prints and other such work in which we deal, but the claim of want of stability certainly cannot be urged against a society that occupied for its abode and meetings the same room for a period of twenty-two consecutive years; and is fortunate enough to retain and re-elect this evening for the twenty-sixth time its worthy Treasurer, who has faithfully watched over its finances for so many years.

On the festive occasion referred to, I had the pleasure to welcome a number of those who, with myself, were present at the first meeting for organization.

It is good testimony of the attractiveness of our work to be able to say that I found them still, after twenty-five years, as ardent and enthusiastic in pursuit of the enjoyments and wonders of our art as in by-gone days.

The plan inaugurated during the year of having an exhibition of the pictures of our members in our own room, from which to select the "presentation prints" is a good one, and I hope will be continued with additional contributors. Our new room will doubtless have more space and better facilities for such and kindred exhibitions.

Our lantern slide exhibition, as already announced, will take place as usual, and will, I hope, have your hearty co-operation. It may also be well to remind you that the next joint public exhibition of the three societies connected therewith, of the cities of Philadelphia, New York and Boston, will, it is expected, take place this year in the city of Boston; I feel assured that you will all make efforts that Philadelphia shall be well represented.

We have to regret the death of one of our members, W. Evan Randolph. Though not often with us, he was highly respected by all who knew him, and always had the prosperity of the society at heart.

As a gentle hint in regard to one of the delinquencies which I fear most of us may at times have been guilty of, I ask your attention for a few minutes longer to the reading of some rhymes I recently found in an engineering journal, which I have taken the liberty of appropriating for the occasion, and of adding a little, that they may serve as a moral for the consideration of us all.

It was a land surveyor
With his mysterious load
Of bright three-legged instruments,
Came striding down the road.

And just before the district school
He paused to take a "sight,"
And all the children came and stared
At his theodolite.

The little schoolma'am hurried out,
To see what caused the stir;
And one and all they took the man
For a photographer.

And "Oh," the little schoolma'am cried,
"How happy I should be
If you would take our likenesses;
My scholars all and me."

The man (he was a wily wag)
Replied, "'Twould cost a sight
To photograph a district school
With a theodolite!"

But still the little schoolma'am begged
And longed to have her way;
She searched her pocketbook and found
Two dollars she could pay.

He said, "Although that isn't much
For taking such a view,
You're so hard up for likenesses
I guess I'll make it do."

The schoolma'am scrubbed her little ones
With lavish soap and care,
And straightened down their pinafores,
And "slicked" their stubborn hair.

And then it was a goodly sight
To view that stiff thirteen;
Six boys and girls on either side,
The schoolma'am in between.

His big bandanna then he spread,
And 'neath it took a look;
And "sighted" them sufficiently,
And laughed until he shook.

Then drawing forth his leveling book,
Therein with wondrous care,
Her name, and her address he took,
And promised then and there

The finished picture soon to send,
Nor waiting for the pay,
This graceless wight took up his traps,
And hurried on his way.

Of course the picture ne'er was sent,
'Twas empty promise, nothing more,
To these thirteen confiding ones,
Grouped round the school-house door.

My photographic friends, a moral take,
Ne'er promise "prints" you'll never make.
Leave not your friends in such a plight
As did the man with his theodolite.

With renewed thanks for your kindness and indulgence during the past year, I wish you one and all a happy new year, with health, prosperity, and plenty of those "developers" to our powers, activity and application, so necessary to success in life.

Mr. Coates suggested that the Excursion Committee arrange a series of single day excursions, of which due notice be given to members.

On motion of Mr. Coates, Mr. John G. Bullock was appointed to represent the society on the Committee of Arrangements in charge of the second annual joint exhibition, to be held in Boston during the coming spring.

A paper was read by Mr. Robert S. Redfield, on "Preparing Photographs for Exhibition." See page 45.

Mr. John C. Browne called attention to the new Welsbach incandescent gas light as likely to have valuable uses in photography. He briefly described the light as being produced by a tubular piece of woven fabric about two inches long, which was treated with certain chemical substances, and afterwards baked so as to practically destroy the fabric itself. The tubular "mantle," as it is then called, is suspended within a glass chimney by means of platinum wire over a Bunsen burner.

At a low gas pressure sufficient heat is generated to produce an intense white incandescence in the mantle similar to electric light. Where such a white light is objectionable the color may be modified by the use of suitable chemicals in preparing the mantle. A powerful company is now preparing the burners for the market, and they will probably soon be offered for sale.

Mr. William Bell proposed a method of treatment for lantern slides on gelatine plates as follows:

For contact slides on Carbutt's A or B plates, commence developing with an old filtered ferrous-oxalate developer, adding a little freshly mixed developer from time to time. The formula consists of:

a.	Potassium oxalate	1 pound.
	Hot water	3 pints.
b.	Iron proto-sulphate	1 pound.
	Hot water	1 quart.
	Citric acid	¼ ounce.
c.	Potassium bromide	1 "
	Water	1 quart.

Mix one day before use, 4 ounces *a*, 1 ounce *b*, and 30 drops *c*. The best results are obtained with developer one month old, adding a little freshly made, as above stated. After use, bottle, and filter before again using. Develop until the highest light begins to color, wash, fix well and wash until all hypo is out of the film. If this latter washing is not thorough, the slide will be ruined in the next operation.

The slide is then immersed in the following solution:

Mercury bi-chloride	1 ounce.
Ammonium chloride	1 "
Water	10 ounces.

Dissolve and add 15 grains chloride of gold. For very weak positives, the full strength can be used. For stronger ones, dilute to one-half. When whitened by this solution, wash well and flow with:

Liquid ammonia	1 to 2 ounces.
Water	10 "

which will blacken it again, producing proper intensity and a desirable tone.

If the positive has had too short exposure to the light, the above will make it too black and white. Correct exposure only will give harmonious results.

Mr. Carbutt referred to a statement made in a recent number of Anthony's BULLETIN, by Mr. Henry J. Newton, to the effect that the slow gelatine plates usually recommended for lantern slides were not the best for the purpose. To obtain softness and atmospheric effect, he thought quicker plates were required.

Mr. Carbutt thought that with the ordinary run of negatives, quick plates would cause a great percentage of loss. Acting on the requirements of the majority of slide makers, he was now making his plates for this purpose even slower than heretofore. To make a good slide on a quick plate, a good strong negative was necessary. With a weak negative the slide would lack brilliancy.

Mr. Bell corroborated Mr. Carbutt in this opinion, as did also Mr. Browne, who stated that in his experience the best slides were made by the albumen process, which was a very slow one. Next to albumen he would rank washed emulsion, then the wet process, and lastly gelatine.

Dr. Wallace thought that with the wet process, a strong negative would produce the best results, while a thinner one would be more suitable for albumen.

As to which was best for gelatine, Mr. Carbutt recommended one of medium strength, stating also in reply to Mr. S. M. Fox, that with a thin and a dense negative, providing detail and gradation of light and shade were equal in both, equally good results could be obtained in gelatine.

Mr. Bartlett showed a number of excellent pictures made by the light of "Blitz-Pulver" prepared for Messrs. T. H. McCollin & Co. The powder as now made produces even less smoke than heretofore, and the proportion of the ingredients had been so carefully determined as to give a maximum of actinic light with the least possible quantity of material. Ten grains was sufficient for a portrait exposure, when the source of light was less distant than five feet, but if ground glass was used in front of the light double quantity should be used.

Several members related their experience in making flash-light pictures, the general opinion being that the quantity of material used should not be stinted.

Mr. Fassett showed a picture of a party at dinner which was completely successful, and in which five or six times the usual quantity of power had been used.

Adjourned.

ROBERT S. REDFIELD,
Secretary.

ST. LOUIS ASSOCIATION OF AMATEUR PHOTOGRAPHERS.

THE regular meeting of the St. Louis Association of Amateur Photographers was called to order by *President* BAIN, with nine members present.

The unapproved minutes of January 3, 1888, were read and approved as read.

The resignations of Messrs. Clement M. Seaman and Walter Jaccard as active members, were accepted, to date from January 1, 1888.

Action on the cases of members in arrears for dues was deferred until the next regular meeting, so as to give time for the Secretary to notify them of their arrearage, and ascertain whether they desire to continue their connection with the association.

On motion, it was ordered "That a vote of thanks be given St. Louis University, for the use of their lecture-room, on Tuesday, January 10, 1888, for the public exhibition of the Cincinnati lantern slides."

On motion, it was ordered, "That a vote of thanks be given to Mr. Edward L. Wilson, for his kind offer to send the *Philadelphia Photographer* to the association, free of charge, for 1888."

There being no further business, the association adjourned until Tuesday, February 7, 1888, at 8 P.M.

After adjournment, the Pittsburg lantern slides were exhibited to the members present.

WILLIAM M. BUTLER,
Secretary.

CHICAGO LANTERN SLIDE CLUB.

OUR club has entered upon another year's work with increased interest in lantern slide work and in amateur photography. At the annual meeting held the 24th inst., the past secretary, John Nicol, Ph.D., was unanimously elected President for the ensuing year, and in accepting the office he stated that he should not be satisfied until the Chicago Lantern Slide Club was equal to any of the amateur clubs in the States. The other officers of the club were elected, viz.: *Secretary*, W. A. MORSE; *Treasurer*, W. B. SHUFELDT.

Then followed the showing of Cincinnati's contribution slides, which were ably described by Dr. H. D. Garrison of the Chicago College of Pharmacy.

The slides were considered by the majority of members the very best thus far projected, and that club should certainly congratulate itself on the beautiful contribution sent the rounds. We anticipate a very pleasant and active year with an increasing number of new members. Respectfully, W. A. MORSE,
Secretary.

THE NEW ORLEANS CAMERA CLUB.

ON Saturday evening, January 14th, the third complimentary exhibit and lantern slide display was given by this club, and a large audience was present.

A number of frames contained mounted photographs of local scenes, but the prettiest and most enjoyable display were the 150 lantern slides carefully selected from over 500, as taken by the members of the club.

Dr. WM. R. MANDEVILLE made the opening address, speaking briefly of the success which has attended the club's career, of the enthusiastic interest, which promises not to flag, prevailing among its thirty-one members.

Secretary HARRY T. HOWARD explained the different slides, whether instantaneous or time, what subject, description, etc., and was a very entertaining talker.

Messrs. E. L. DUQUESNES and P. REYNES manipulated the stereopticon with good effect.

After this part of the entertainment was concluded, Mr. Howard asked that all remain seated and still, as an experiment was about to be tried. The gas was turned off, three cameras and operators were on the stage, when suddenly, in imitation of lightning, the magnesia flash lighted the room brilliantly for a fraction of a second, and photographs were taken instantaneously. It is not yet known whether the experiment resulted successfully or not; but the trial was under favorable circumstances, and was right startling while it lasted.

The following are the Camera Club's officers: Dr. WM. R. MANDEVILLE, *President;* JOS. A. HAUCKS, *Vice-President;* HARRY T. HOWARD, *Secretary* and *Treasurer.*

PHOTOGRAPHIC SECTION OF THE ROCHESTER ACADEMY OF SCIENCE.

REGULAR MEETING, JANUARY, 31, 1888.

THE subbject for the evening was experiments with the Hydroquinone developer. The formula used was the one given by "Inquirer" in the BULLETIN of December 10, 1887.

President CROUGHTON was grand-master of the manipulations, and under his skillful eye the developer sustained its good reputation. With it he developed some fine positives, but lost one negative through the dimness of the light used in developing.

Many of the members expressed their intentions to give it (hydroquinone) a trial at home.

The *President* stated that he had used the developer before, but never with such good results, and thought some of the virtue laid in the formula used.

Mr. MATHEWS showed some fine transferrotype opals, and Mr. HORNE, a bromide print toned with nitrate of uranium.

Thanks are due to the Bausch & Lomb Optical Company for the gift of the condensing lens, instead of to E. E. Bausch & Son, as stated in last report.

The subject for the next meeting will be a demonstration of the "Platinotype Process," by Yours truly, MILTON B. PUNNETT,
Secretary.

THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

REGULAR MEETING, JANUARY 10, 1888.

THE meeting was called to order at 8.15 P.M.

President WALKER in the chair.

The *President*—We are here by call issued on the 6th of January, a card being sent to each member notifying him "That the next regular monthly meeting of the society will be held Tuesday evening, January 10th, at 8 o'clock, on which occasion the adoption of the proposed amendments to the Constitution, and such other business as may be in order, will be discussed."

Pursuant to that call I will take up the order of business as it is provided for at annual meetings, there having been no provision made for meetings of this character. The first order of business is the roll call. Under ordinary circumstances we do not call the roll, but to-night, as amendments to the Constitution are a subject of consideration, it may be a matter of importance as to who are here, and who have the right to vote; and as there seems to be some difference of opinion as to these amendments, we want to proceed correctly, properly, and orderly. Instead of calling off the long list of members according to the published pamphlet, it may be a shorter and better method for the Secretary to take down the names of the members and thus save time.

Mr. D. P. READ then called the roll, and the following active members answered to their names: Jewett, Stebbins, Piffard, Newton, Roumage, Murray, Canfield, Bussing, Duffield, Spaulding, Palmer, Beach, Hager, Randolph, Williams, Carter, Boynton, Buckley, Alker, Smith, Irwin, Mitchell, Clark, Plimpton, Vandeveer, Simpson, Cobb, Baker, Rollins, Bruce, Lawrence, Baldwin, Rowell, Eckert, Frisbie, Allen, Fisher, Howell, Bradley, Apgar, Goodwillie, Allerton, Mali, Fox, Johnston, Atkinson, Ferry, Read, Granger, Schuyler, Grisdale, Cheesman and Elliott.

The *President*—The gentlemen will understand that under the Constitution only the active members are entitled to vote. We have now a list of the members present voting. The reading of the minutes of the last meeting is now in order. I have the stenographic copy of the minutes here. Do you wish them read? You are all familiar with them. They are very brief.

Dr. PIFFARD—I move that the reading of the minutes be omitted.

Mr. CANFIELD—Mr. President, I think it only fair to have them read, so that the members who were not here at the last meeting will know what occurred.

The *President*—I will read them or have them read. On the question being put as to the amendments offered by the Board of Trustees, a motion was made by Dr. Piffard, and the minutes will be read from that point only. All that preceded was technical and related only to the entertainment or demonstration of the evening.

The minutes of the last meeting were then read by Mr. Read.

The *President*—You have heard the minutes of the last meeting read. What is your pleasure?

Mr. STEBBINS—I move they be adopted.

The *President*—There being no objection, it is so ordered.

Are there any committees to report. Where is the Committee on Metric System?

Mr. STEBBINS—I would like to say, Mr. President, that it has been utterly impossible to obtain a continuous meeting, and therefore we have not been able to accomplish anything yet, and I merely report progress at this meeting.

The *President*—If you will permit me, I will proceed a little out of the order of business, as appears here, because there are no regular rules of order for this kind of meeting, strange as it may seem, and I want to make, if it is agreeable to you, the order of business as consistent as possible, so as to give us the entire latter part of the evening or night, rather, for the consideration of the immediate subject referred to in the call, and I suggest if there is anything that anybody has to offer, previous to proceeding with the consideration of the amendments to the Constitution, I wish they would do it.

Dr. PIFFARD—I move that we proceed with the special order of the meeting.

The *President*—As there is nothing else before the meeting at this time we will proceed to the consideration of the amendments to the Constitution, and I wish to say in this connection that I trust that you gentlemen will all bear patiently with me (and I know I shall do so with you), remembering the embarrassing position in which I am placed and remembering that whatever my own views may be on these subjects, and however I may differ from you, my mouth is closed, and I have to sit here simply to do the will of the body. I will thank you if you will be very cautious not to say anything that can in any wise be construed as personal, so that we may all go away from here without any bitterness in our hearts, and that we may discuss candidly and cautiously the amendments to our Constitution which some of us deem to be unnecessary and others deem to be necessary.

Article VIII, Section 1, of the present Constitution of the society, provides "That any proposed alteration, addition or amendment to this Constitution shall first be submitted to the Board of Directors, and, if approved by a vote of not less than two-thirds of the whole number of directors, it shall be submitted to the active members of the society for ratification."

The Board of Directors have had submitted to them such amendments to the Constitution and have passed upon them, and there has been mailed to every member of this society a copy of those proposed amendments for his examination and approval or disapproval.

Our Constitution further provides that "if ratified by a vote of not less than two-thirds of the active members present and voting at a regularly convened meeting of the society, then such alteration, addition or amendment shall be carried, and not otherwise."

I call your attention to the fact that it requires a two-third vote to carry any amendment to this Constitution.

The Board of Directors, in dealing with the subject, have endeavored to act constitutionally, and have gone beyond the instructions of the Constitution, and have sent to every member a copy, which is not provided for. We have gone further than that, and have sent to every member a copy of the original Constitution, because there were many members who had never seen it. We had no copies to give them, because they had run out; but since it was called for by some, we went to the expense of printing them. We knew we could not afford to do it, but nevertheless we have done it because we wanted no man to complain that he had not the whole of the law before him that he might vote on the proposed amendments intelligently. We have gone further than that. At the request of the society we have had printed the proposed By-Laws, and I presume every member has in his hands these three documents now and is thoroughly armed with the paraphernalia of war; but when he stabs let him stab gently, that it may not hurt much, and endeavor to come to a peaceful conclusion, all going home happy and contented, realizing that the society will be prosperous, and will grow in spite of us, whatever we may do.

(*To be continued.*)

Bibliography.

LA PHOTOGRAPHIC APPLIQUÉE A LA PRODUCTION DU TYPE D'UNE FAMILLE D'UNE TRIBU OU D'UNE RACE. Par Arthur Batut. Paris: Gauthier-Villars. 1887.

This little book of 25 pages and two plates is written to illustrate the application of photography in getting type portraits of families, or tribes and races of people.

The work of Mr. Batut is well done and forms a curious contribution to our art. The mode of operating is very simple, and consists in making what are known as "Composite Photographs" of families, tribes and races of people, to serve as studies in scientific, artistic and ethnological investigations.

Like all the productions of Messrs. Gauthier-Villars, the typographic work and illustrations are admirably executed. The two photo-type plates are very interesting illustrations of the application of photography to these studies.

DEUTSCHER PHOTOGRAPHEN KALENDER FOR 1888.

This handy little volume from the editorial table of K. Schwier, the President of the Deutscher Photographen Verein, comes duly to hand. As usual, it is full of excellent practical methods and material for reference for the photographer. The illustrations are a licht druck from one of Oscar Suck's pictures that obtained the gold medal at the Chicago Convention; and also a photogravure by Obernetter, of Munich, a very fine piece of photo-mechanical printing.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

Q.—W. B. C. writes: Can gold chloride in solution be measured by the hydrometer as silver is in a silver bath? How can I prepare wood to print for wood-cuts? How can albumen be taken from a printing bath without boiling it down?

A.—Gold chloride added to water raises the specific gravity of that liquid, and consequently its density could be determined by the hydrometer. But when we remember that there is only a few grains of gold in an ounce of the solution, the hydrometer would have to be an extremely delicate one to be of any practical use. We do not think the regular silver hydrometer would be of any service whatever. We gave a number of methods last year for printing on wood; see BULLETIN 1887, pages 76 and 107. To take albumen out of a printing bath, add a little alum to it, make alkaline with a little ammonia, and place it in the sunlight for some hours. Then filter out the dark-colored precipitate and repeat the operation to see if action is complete. When finished, neutralize with chemically pure nitric acid, make up to strength with new silver nitrate, and the bath will be in working order•

Q.—WM. J. writes: How should a person proceed in developing a "snow view" to bring out all the minor details and at the same time bring out the snow and sky white? I have recently made plates which, while the shadows came out clear and distinct enough, there was a smoky, bad look to the snow and sky. I know the plate was over-exposed, but what I want to know is how to remedy the evil next time. I also made plates of horses standing in snow, with want of detail in bringing up muscular effects, etc., while the snow came out white. What is the trouble with me? I know the trouble is in my manipulation. Now, can you help me? Please drop me an idea in the BULLETIN, and oblige an old subscriber and a well-wisher.

A.—The best thing to do with snow pictures is to use a weak developer, and "go slow." By weak developer we mean one in which the pyro and alkali are in the same ratio as usual, but with twice the amount of water. Try this method and have patience and you will succeed.

Q.—S. McM. writes and incloses piece of albumen paper with iron stains upon it, asking what the trouble is.

A.—These stains are caused from iron rust in the dishes or in the water used in washing the prints.

Q.—W. B. writes: Will you please inform me what is meant by high lights in photography, and 2dly, How can I tell when a plate has been over or under-exposed while developing same?

A.—The high lights in a negative are the darker portions and correspond to the highly illuminated portions of the subject. You may tell when a plate is over-exposed from the manner in which the high lights (the dark portions) develop. These come out quickly and much before the rest of the picture and then fog over while the balance of the negative is being developed.

Q.—S. J. A. writes: In BULLETIN, September 24, 1887, I asked a question about oxalate of potash which turned blue litmus paper red without the addition of acid. Your answer was that such potash was not good. I also find that there is a neutral oxalate of potash spoken of. Are there two kinds of oxalate? One lot I had required oxalic acid to make it turn blue litmus to red, while another lot turns the paper red without any acid. The first lot made better negatives than the last. Can you give me any plan whereby I can use this last?

A. There are several oxalates of potash known, but the proper one to use in the oxalate developer is the so-called neutral oxalate, that is, one that does not contain an excess ot acid. This salt is generally alkaline, that is, it turns red litmus paper blue, and is made so in order to insure no excess of acid. If there is an excess of acid in your oxalate, add to it when in solution some carbonate of potash (salts of tartar) until it just turns red litmus paper to blue; now on adding a few drops of oxalic acid solution your oxalate solution will be ready to use, provided it is saturated.

Q.—J. L. B. writes: Will you please answer the following through the BULLETIN. Can flashing powder be used without a drop shutter with good result? Is there any danger in using the powder, and will lamps have to be used with it?

A.—A drop shutter is not necessary. Focus on the subject with gas or other light, then cap the lens until you are ready. Place some of the powder on an iron shovel or plate, and arrange it so as to illuminate the subject properly. Now uncap the lens and fire the powder at once; the flash is instantaneous, and the lens can be capped again at once. In regard to the danger of the powder, we will say that it entirely depends upon whether it contains potassium chlorate or not. *All flash-powders with the chlorate are undoubtedly very dangerous.*

Q.—P. F. K. writes: We have a room 26 feet east and west, and 16 feet north and south; which is the best way to put in a skylight? How high should the light be at the highest point, and how low at the lowest? Also tell about side light, and the best way to make a good operating room.

A.—Have the skylight so arranged that you can work either end of room, east or west. As to dimensions, see BULLETIN 1887, page 479, No. 15.

Q.—W. G. W. writes: Please tell me why Mr. Cassebaum, in his paper on intensification, No. 21 of the BULLETIN, uses gallic acid instead of pyrogallic acid? By melting the gallic acid, carbon dioxide is eliminated; I do not see that that ingredient plays any useful part in the process of intensification.

A.—Gallic acid is essential to the proper intensification in the method referred to; pyrogallic acid could not be used, at least not with any certainty of success.

Q.—J. C. A. writes: Please give directions for using an ordinary camera and lens for enlarging on bromide paper.

A.—These directions are entirely too long for these columns. Consult the last issue 1888 of the "British Journal Almanac," where very elaborate instructions are given by the editor.

Q.—W. writes: I would feel obliged by an answer to the following questions in the BULLETIN. 1. Are colored crayons (pastels) considered permanent? 2. Are atomizers used for pastels, and if so, what liquid? 3. Do you publish a book on coloring lantern slides?

A.—1. Pastel pictures are permanent if the crayons are good, but many of these are colored with aniline coloring matters that fade. 2. Atomizers are used to fix pastels, but we do not know the nature of the liquid; it is to be found in any good artist's store. 3. We do not publish such a book.

Q.—O. L. Y. writes: I have a negative of a newspaper and also a portrait negative; how can I print this portrait and have the newspaper for the background, without printing in the medallion form? I have tried vignetting, but the outlines of cotton mask show in the print.

A.—Try vignetting again, using tissue paper over the front of printing frame; with care you must succeed in this manner.

Q.—J. D. F. writes: Please tell through the BULLETIN whether a Darlot lens is more rapid than a Gundbach lens, or *vice versa.*

A.—The best way to answer such a question is to get the two lenses and try them side by side. We know of no better way to make the answer sure.

Views Caught with the Drop Shutter.

W. V. RANGER, of Syracuse, called in a few days ago and paid us a pleasant visit.

RUSSELL, of Baltimore, Md., has issued an unique little advertising card in the form of a B. & O. Railroad pass, which is really an invitation to his studio. The whole idea is neat and amusing in addition to being a good method of advertising.

WE are indebted to the publishers of the *Photographic Times* for a bound volume of their journal for 1887, being volume 17. We must not fail to tell them that we think leaving out the advertisements is a great improvement and makes the volume much more easily handled. We tender our best thanks for this valuable addition to our library.

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EVENING POST JOB PRINT, N. Y.

At [illegible] Bay Lake [illegible]

ANTHONY'S
Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

FEBRUARY 25, 1888. Vol. XIX.—No. 4.

PRESERVING PYROGALLOL.

THE question of the preservation of pyrogallol developers is always an interesting one, and is very important to the practical photographer. Of all the substances recommended for this purpose, it has long since appeared to us that sulphurous acid was the most effective and practical. But our English contemporary, the *British Journal of Photography*, has just made some assertions that are calculated to shake our faith in the good qualities of sulphurous acid as a preservative of pyrogallol in solution. It says: "We had mixed up a quantity of stock pyro solution for a special purpose—the development of transparencies—using bisulphite of soda in order to secure the extra quantity of sulphurous acid. This worked beautifully and charmed us with the results at first, but gradually, in the course of a few days only, it began to get slower in its action and to require more ammonia to start the image or to give it any vigor. At this time we were employing the same solution every day, and were consequently in a position to note the gradual change in its behavior; but this we set down chiefly to the fact that the weather was getting colder, and our laboratory is not the warmest of places. At last, during the severe frost after Christmas, we were compelled to resort to plain pyro freshly mixed, and then our troubles ceased. Some days ago, when the weather was considerably warmer—or less cold—we returned to the stock solution of pyro and bisulphite, and found it slower than ever; but worse than that, it refused to develop at all unless such a quantity of ammonia was added that the plates fogged all over. We blamed the plates, of course, setting them down as insensitive, and so we found them at least for that style of development, for no prolongation of exposure altered the result in the least. Trying back with fresh pyro, all went well; also a fresh solution made with bisulphite in the same proportion as in the old one. Obviously there was nothing for it but to indict the stock solution."

From this it would appear that a large excess of sulphurous acid in a solution of pyrogollol is detrimental to the preservation of this developing agent. We are constrained to doubt this, for we have kept solutions of pyrogollol containing very little sulphite of soda and considerable sulphurous acid for many months, indeed more than a year, and have found them retain their developing power, at least for all practical purposes, the same. These solutions have become some-

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what colored (deep amber), but we do not note any great tendency to fog unless we force the development. We never use ammonia in the developer, but sodium and potassium carbonates; and if our English friends were to drop the volatile alkali and use the above, we think many of their difficulties with pyrogollol development would disappear. But in this particular case the difficulty must, in our minds, arise from some other cause than the mere presence of sulphurous acid. It is very possible that incipient decomposition in the pyrogollol may have begun before the solution was made, and then the presence of salts of sodium and potassium facilitate the further decomposition of this material. Certain impurities in this reducing agent also accelerate its decomposition, notably gummy matters.

We have also noted that pyrogallol that has been exposed to light, and become discolored, is more apt to give rapidly decomposing solutions than that which is white and has been kept in the dark, and this even in acid solutions.

We do not doubt that our English friends had this experience which they mention with that particular bottle of pyrogallol; but before they condemn the use of sulphurous acid as a preservative of developers, we advise them to make further experiments, and should also be glad to hear of the experience of others in this direction. The charge brought against sulphurous acid is a very serious one, and like the law we shall hold him innocent until he is proven guilty. It is perhaps possible that the bisulphite of soda used may have contained some impurity that caused the decomposition of the pyrogallol; indeed, we think this far more probable than that it should be the extra molecule of sulphurous acid. If any of our readers have any experience bearing upon this question we shall be glad to hear from them. We should feel grieved to have to discard sulphurous acid, for it has appeared to serve us so well; nevertheless the truth must be known, and if an excessive use of this substance is really harmful to pyrogallol, we must use it more sparingly in the future.

EDITORIAL NOTES.

The next convention of the Photographers' Association of America will be held at Minneapolis, as we have already stated in these columns, and the dates fixed upon are July 10th to 14th. Messrs. Potter and Carlisle, to whom was intrusted the duty of selecting suitable buildings, have decided upon the Exposition We have a good deal of faith in the judgment of these gentlemen and feel satisfied that their choice is one that will please the members of the association generally. We understand that the art gallery in the building selected is entirely separated from the main structure, and there will be no necessity for separate constructions to hang pictures upon, which was the cause of so much discomfort at Chicago. We hope that the merchants will also be well looked after and kept far enough away from the business meeting room, as they also can cause speakers an immense amount of discomfort in unpacking and fixing their apparatus, etc.

We are sorry to record the burning of the works of the Eastman Dry Plate and Film Company at Rochester on February 9th, details of which will be found on another page. We are in sympathy with any one thus embarrassed, as a recent experience of the same kind with our publishers showed us how such a calamity carries with it trouble and annoyance that seems to be endless.

THE annual exhibition of the Columbia College Amateur Photographic Society will take place March 1st and 2d, and any unframed work should be sent in on Monday, February 28th, to give the Committee an opportunity to arrange it for exhibition.

OUR Chicago contemporary, *The Eye*, suffered a severe loss from fire on January 14th; but we are glad to note that it is again in good quarters, and must congratulate it upon its improved appearance since its misfortune.

ALBANY, N. Y., has a very well organized Camera Club, and is doing some excellent work. Among other things that are unique we note that they have their dark-room lighted by electricity fed from a storage battery. Their first outing was to be on Washington's Birthday and the point of interest Howe's Cave. We hope that they had good success and that we shall be fortunate enough to see some of the pictures.

SINCE Dr. Eder has had charge of the new Imperial Photographic Institute at Vienna he has organized a system of instruction that is at once practical and thorough. The course includes free-hand drawing and rudimentary photography for beginners. In the advanced classes chemistry, physics, spectrum analysis and other subjects allied to photography will be taught, including photo-mechanical printing.

ONE of the latest developments in the application of photography is being carried on by Dana, the well known photographer of New York. He is now making portraits on metal at night by electricity. In this manner watch-cases, lockets, sleeve-buttons, breast-pins and small plaques are embellished with portraits in a unique manner and with the most brilliant effects from both a photographic and artistic standpoint, the metallic surface lending itself to this treatment with the result of producing a new and very desirable style of ornamentation.

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

The late Max Petsch—Magnesium Flash Photography in St. Petersburg—Enlargements by Flash Lights—Magnesia Oxyhydrogen Lights—Brown Colored Platinotypes, new Platinotype Process of Mr. Pizzighelli.

PHOTOGRAPHY has suffered a loss. Max Petsch, also well known in the United States, one of the founders of the renowned firm of Loescher & Petsch, died suddenly on the 18th of December, in his forty-seventh year, having lost his wife only two months before his demise. The career of this man should serve as an example to the many aiming at similar results. He was a self-made man. In early life he lost his father and shortly afterwards his mother. An orphan, without friends and having to rely upon himself, he served an apprenticeship in some drug house. Mr. F. Beyrich, his guardian, employed him afterwards in his photo-chemical laboratory, and to improve his practical knowledge of chemistry and apparatus, he studied photography at the studio of Grundner, Sr. His employer had no great opinion of his abilities, but this opinion proved to be deceptive. About this time Petsch and the writer of this had already formed the idea of calling into life a photographic association. His friend Loescher was also consulted and the plan confided to him. A further result of these consultations was the formation of a partnership and the opening of a gallery. This took place in 1861. Although busily engaged in his new enterprise he did not lose his ambition for founding a photographic association. With sixty members it was called into existence. Petsch, satisfied to have done what he could for the association, devoted now all his energies, in company with his brother-in-law, Loescher, to their new business. In his indefatigable efforts he recognized soon that only by improving the artistic part of portrait-photography could this branch be elevated, and the most lively discussions ensued with the writer of this about posing, illumination and proper lighting. Petsch felt the want of his own artistic education and studied continually. He read all the works about the arts, and artists who have gained celebrity since have found a welcome reception in his house. With these he arranged so-called drawing-evenings, devoted not only to drawing but to discussions about the latest art publications, etc. But Petsch was not egoistic enough to keep all this for himself; he tried his best to impart to others what he had learned.

In 1864 he wrote an article about posing and lighting, which soon after made its way into English and American journals and gave him a name, honored and respected.

When part of the members of the association, of which he was one of the founders, seceded, he was elected chairman of the "Verein zur Förderung der Photographie;" and when his country called him to arms, in 1870, we see him in front of Metz, battling the enemy. In 1871 he returned home, devoting himself again to his business and the association he was a member of. At the same time he gave proof of his immense talent in arranging the much admired show-group pictures published by him, and of which Mr. E. Wilson imported a good many to the United States. The artistic education of the photographer was such a favorite idea of his, that he insisted upon the introduction of drawing-evenings for the association.

Besides the article "About Posing and Lighting," by M. Petsch and H. W. Vogel, he wrote "About the New Studio" of Loescher & Petsch, "About Individual Influence in Taking Portraits," about "Children's Portraits," "Gradation of Backgrounds," etc. All these articles have been translated by the *Philadelphia Photographer* and found a place in Vogel's "Lehrbuch der Photographie." Many photographers in the old and new world are under obligations to him for his instructive writings. The "Verein zur Förderung der Photographie" elected him an honorary member.

Petsch, in his continued artistic aspirations, soon recognized that artistic photography has its limits; his aim was higher, and, like many others, he gave it up, to devote himself entirely to painting. He obtained great success in the painting of flowers, and his pictures had such a reputation that none remained upon the easel and many duplicates were ordered.

He was teacher of the art school in Carlsruhe in Baden. A liver complaint was the cause of his death.

We are now in the midst of the winter season. The continuous bad weather necessitates more than ever the application of artificial light. Flash light is the parole, and in Petersburg it finds still more application than here.

My friend Levitzky, photographer to the Emperor, writes to me: "This lightning process really forms a highly practical advance for photography in winter, and with the poor light from which we suffer, particularly at present, we require now (for four weeks) four days to make an albumen print. We now make, every day, from two to six o'clock P.M., from six to twelve negatives with the magnesium flash powder. But something untried yet are the magnesium flash enlargements. No system of illumination, no matter whether electricity, gas or kerosene, gives such constant and reliable enlarging results as the magnesium flash mixtures.

"The Gädicke-Miethe mixture has been improved for us by Dr. Olchim. His mixture is twice as sensitive and produces no fumes. The substance is unknown to me.

"On the 15th of this month we had a meeting of the photographic division of the Imperial Russian Society, at which I gave, with my son, a public demonstration, in presence of the Grand Duke Michael and fifty to sixty members, taking a cabinet picture with flash light. Fourteen minutes after the negative was taken, an enlargement (four times the size of the original) upon bromide paper, with flash light, was shown to those present, creating general astonishment.

"For these enlargements we use the new brom alabaster paper of Warnecke, being fifteen to twenty times more sensitive than the Eastman paper. It furnishes magnificent copies."

Magnesium appears still in another form as a photographic light. It is known that magnesium in oxyhydrogen gas gives a brilliant white light, whiter than the lime light. Unfortunately the magnesium particles will melt into little lumps in the fire, thus diminishing the strength of light. My son has now succeeded in producing a magnesium compound that does not melt and will keep for months. We have tried this light, now, for over a week, for enlargements, with the best success. It surpasses decidedly the lime light in the abundance of actinic rays.

In the platinum process another important step has again been brought forward by Captain Pizzighelli. He has now succeeded in producing brown platinum pictures by addition of bi-chloride of mercury. I wrote to you before about the new platinum process of Pizzighelli, saving the development. This process he has now changed somewhat in the following manner, for the production of brown pictures. Pizzighelli describes several methods, but I will give only the most simple and best:

One mixes:

A.	Potassium-platino-chloride (chloro-platinite of potassium K_2 Pt. Cl_4.)	1 part.
	Distilled water	6 parts.
B.	Oxalate of soda and iron (ferric)	40 "
	Powdered gum arabic	40 "
	Oxalate of soda solution (3.100)	100 "
	Glycerine	3 "

The oxalate of soda solution is heated to about 40 or 50 degrees C., the ferric salts and glycerine dissolved in the same, and the warm solution is then added gradually to the gum arabic in a mortar under stirring. It is now ground for some time and then left standing for some hours, that such parts of the gum arabic which are not entirely dissolved yet may do so. It is then ground again, after which the solution is filtered through a clean cloth into a wide-mouth bottle. The pretty thick solution is cloudy and of a green color.

C.	Gum arabic iron solutions	100	parts.
	Chlorate of potassium	0.4	"
D.	Bichloride of mercury sol. (5.100)	20	"
	Solution of oxalate of soda (3.100)	40	"
	Powdered gum arabic	24	"
	Glycerine	18	"

Solution *D* is produced in the same manner as solution *B*.

The proportionate mixtures for solutions *A* and *D* are for sepia-brown pictures:

Platinum solution *A*	5	c.c.
Gum arabic and chlorate of iron solution *C*	4	"
Gum arabic and bichloride of mercury solution *D*	4	"
Together	13	c.c.

The application of the mixtures upon paper is done (as in the other two methods), with a bristle brush without any metal mountings. The gum arabic addition gives cause for the formation of a great many bubbles, but they are of no account whatever, disappearing easily and completely by manipulating the brush with a circular motion. The drying is done in the ordinary way. The dried papers show a weak gloss, derived from the gum arabic, and after drying they are preserved in the chlorate of potassium box. They seem to be less subject to changes than the papers produced by the old process. Samples having been kept for ten days without any particular care, furnished just as good copies as those preserved in the chlorate of potassium box. The copying shows no particular difference to other direct copying processes. The copying or printing is proceeded with until the picture appears as it should do when finished (therefore no over-printing), and if a lot of pictures are ready they are placed, as is known, in

Muriatic acid	1	vol.
Ordinary water	80	vols.

The solution is changed two to three times (until all the yellow color has disappeared), and the pictures are then washed in two or three changes of water, and then dried in the ordinary way.

THE LITERATURE OF PHOTOGRAPHY.

BY W. JEROME HARRISON, F.G.S.

(*Continued.*)

(24.) DESIGN AND WORK, *and Mechanical World.* The Journal of Scientific Industry. For all interested in applied science, new inventions, machinery, manufactures, etc. Small folio; 1876–81? ‖. London.

(25.) EDINBURGH (THE) JOURNAL OF SCIENCE. Conducted by David Brewster. 8vo. 1824–32. (United in 1832 with the *Philosophical Magazine*, which see.)

(25*.) EDINBURGH PHOTOGRAPHIC SOCIETY, TRANSACTIONS OF THE. Monthly (to members only); 1882–88.+ 8vo., 8 pp. Issued by the Hon. Secretary, G. G. Mitchell, 2 Baxter Place, Edinburgh. The Society now numbers 450 members.

(26.) EDINBURGH PHILOSOPHICAL JOURNAL. Exhibiting a view of the progress of discovery in Natural Philosophy, Chemistry, Natural History, Practical

Mechanics, Geography, Statistics, and the Arts. Conducted by David Brewster and Robert Jameson. 14 vols. 8vo. Edinburgh, 1819–25.

Continued as

(26 *a.*) EDINBURGH (THE) NEW PHILOSOPHICAL JOURNAL. Conducted by Robert Jameson. 57 vols. 8vo. 1826–54.

New series. By T. Anderson and others. 19 vols. 8vo. 1855–64.‖ Edinburgh. (United in 1864 with the *Quarterly Journal of Science*, which see.)

LONDON, EDINBURGH AND DUBLIN PHILOSOPHICAL MAGAZINE AND JOURNAL OF SCIENCE.

(See *Philosophical Magazine.*)

(27.) ENGLISH (THE) MECHANIC. A record of Mechanical Invention, Scientific and Industrial Progress, Applied Chemistry, Arts, Manufactures, Engineering, Building, etc. 2 vols. 4to. 1865–66. London.

Continued as

(27 *a.*) ENGLISH (THE) MECHANIC AND MIRROR OF SCIENCE AND ART. A record of Engineering, Building, Inventions, Manufactures, Industrial Progress, Electricity, PHOTOGRAPHY, Chemistry, Astronomy, etc. 13 vols. (III–XV). 4to. 1866–72. London.

Continued as

(27 *b.*) ENGLISH MECHANIC AND WORLD OF SCIENCE, with which are incorporated *The Mechanic*, *Scientific Opinion*, and *The British and Foreign Mechanic.* 4to. 1873–88.+ 24 pp. and 8 pp. advertisements. Weekly; price 2d. London, 332 Strand.

Almost from the commencement the *English Mechanic* became a medium of inter-communication for photographers, and a week rarely passes without the appearance of articles, queries and answers relating to photographic subjects. The columns for "exchange of apparatus" and "sale or exchange" are also largely used by the fraternity.

(28.) ILLUSTRATED PHOTOGRAPHER (THE). Scientific and Art Journal. Weekly. 1868–69. 2 vols. 4to. E. Dring, 54 Paternoster Row, London. Price 3d., or in monthly parts, 1s.

No. 1 bears date February 7, 1868. It was incorporated in 1870 with *Photographic Opinion.*

Vol. I contains 570 pp. and Vol. II 590 pp., ending December 31, 1869, ‖.

Edited first, we believe, by M. George Dawson, and then by Mr. A. H. Wall.

(29.) ILLUSTRATED (THE) PHOTOGRAPHIC ALMANAC, and Manual for beginners in Photography; or, Text-book for advanced students; and a complete guide for colorists, etc., etc. 1869. Edited by A. H. Wall. Large 8vo. Price 1s. Published at the office of the *Illustrated Photographer*, 54 Paternoster Row.

This volume contains 80 pp., including 31 pp. of advertisements; it is illustrated by numerous cuts, and has colored paper covers.

Continued as

PHOTOGRAPHERS' (THE) ANNUAL AND ILLUSTRATED ALMANAC for 1870: A practical manual for the professional and amateur photographer, the beginner, the colorist, and the photo. mechanic. Edited by A. H. Wall: 1870. Large 8vo. Price 1s. Published by J. W. Green, *Illustrated Photographer* office, 54 Paternoster Row.

Contains 70 pp., including 10 pp. of advertisements.

(29*.) INDIA, JOURNAL OF THE PHOTOGRAPHIC SOCIETY OF. Large 4to., six pp. "Issued free to members." No. 1 for May; No. 2, August; No. 3, September, 1887. Published by W. Newman, 4 Dalhousie Square, Calcutta.

(30.) INDIAN (THE) JOURNAL OF PHOTOGRAPHY; 1887. Edited by Professor Sheppard, 64 Dhurrumbollah street, Calcutta.

(31.) JOURNAL (THE) OF THE PHOTOGRAPHIC SOCIETY OF LONDON. Containing the transactions of the Society, and a general Record of Photographic Art and Science. 8vo. Vol. I, nineteen numbers. 234 pp. March 3, 1853, to June 30, 1854. Edited by Arthur Henfrey, F.R.S., F.L.S., etc.

Vol. II, twenty numbers. July 21, 1854, to February 21, 1856; 320 pp. Edited by A. Henfrey.

Vol. III, sixteen numbers. March 21, 1856, to June 22, 1857; 317 pp. Edited by Rev. J. R. Major, M.A., F.S.A.

Vol. IV, thirteen numbers. July 21, 1857, to July 21, 1858; 268 pp. Edited by William Crookes.

Vol. V, eighteen numbers. August 21, 1858, to June 15, 1859; 327 pp.

Vols. V to XII were edited by H. W. Diamond, M.D., F.S.A.

Vol. VI, fifteen numbers. July 15, 1859, to September 15, 1860; 336 pp.

Vol. VII, seventeen numbers. October 15, 1860, to February 15, 1862; 388 pp.

Vol. VIII, twenty-four numbers. March 15, 1862, to February 15, 1864; 468 pp.

Vol. IX, twelve numbers. March 15, 1864, to February 15, 1865, 210 pp.

Vol. X, twelve numbers. March 16, 1865, to February 16, 1866; 278 pp.

Vol. XI, twelve numbers. March 16, 1866, to February 16, 1867; 218 pp.

Vol. XII, twelve numbers. March 15, 1867, to February 17, 1868; 200 pp.

Vol. XIII, for 1868, 210 pp. Edited by H. W. Diamond and J. Spiller.

Vol. XIV, for 1869. Edited by J. Spiller.

Vol XV, 1870 to 1873. Edited by J. Spiller, and H. B. Pritchard. 232 pp.

Vol. XVI, edited by J. Spiller and H. B. Pritchard; 1874 to 1876; 164 pp.

(31 *a.*) NEW SERIES: Vol. I, for 1879; 76 pp.

Vol. II, for 1878; 108 pp.

Vol. III, for 1879; 116 pp.

Vol. IV, for 1880; 134 pp.

Vol. V, for 1881; Vol. VI, for 1882; Vol. VII, for 1883; Vol. VIII, for 1884; Vol IX, for 1885, 172 pp.

Vol X. PHOTOGRAPHIC JOURNAL (THE), including the Transactions of the Photographic Society of Great Britain for the Session 1885 to 1886. Edited by Captain W. de W. Abney, R.E., F.R.S. 8vo. pp. vi and 178. Issued in nine monthly numbers; October, 1885, to June, 1886. Seven illustrated numbers, 9d.; catalogue number, 6d.; one number, 3d. Harrison & Sons, 59 Pall Mall.

(*To be continued.*)

NOCTURNAL PHOTOGRAPHY WITH MAGNESIUM.

By C. E. von Sothen, *Instructor U. S. Engineer School of Application.*

Encouraged by the very satisfactory results which I have obtained from my experiments with the magnesium flash-light, I have thought that those readers of the Bulletin who have not already hit upon some other practical method might profit by my experience, and to these I will briefly describe my *modus operandi* by giving a short *résumé* of the principal points to be observed for the attainment of the best possible results.

For the photographing of interiors with family groups, especially when children are included, every part of the photographic apparatus brought into action should be of the most rapid kind—a quick lens, a quick plate and a quickly burning light. As to the lens, I prefer a Dallmeyer rapid rectilinear for being, in my opinion, unsurpassed for rapidity combined with perfect definition and evenly brilliant illumination. Focus with full opening by means of lamps, then insert a stop of $\frac{f}{16}$, or, if necessary, $\frac{f}{20}$, but not smaller. Use plates of sensitometer No. 24 or 25, and with the lens and diaphragm given above, and the light to be described further on, they will respond to the developer as readily as if they had received a full exposure under the skylight. The next thing, and the most important one of all, is the mixture for the luminous flash and its ignition; and here I wish to remark that, in spite of everything that has been said against the use of potassium chlorate as an admixture to the magnesium powder, I consider its presence is essential, and the alleged danger arising from its use so exaggerated, that I shall adhere to it without the slightest hesitation. That chlorate of potassium and magnesium, when mixed, form an explosive, and, if carelessly handled, a dangerous compound, cannot be denied; but so, and even more so, are many of the chemicals in daily use in our laboratories; and photographers who know how to avoid the evil consequences, immediate or indirect, arising from frequent use of such dreadful poisons as potassium cyanide, potassium and ammonium bichromate and mercuric chloride, need certainly not be afraid of mixing a few grains of potassium chlorate with a teaspoonful of metallic magnesium. Magnesium alone burns too slowly for actually instantaneous effects; an oxydizer is absolutely necessary for its rapid and complete combustion, and this mission chlorate of potassium fills to perfection. If used in conjunction with some other oxydizer, as manganic oxide or potassium permanganate, the amount of chlorate necessary is but small, 15 per cent. or 3 grains to a flash being quite sufficient, and it should not be mixed with the magnesium until everything is ready for making an exposure. My mixture consists of four different parts, each in a separate little package; one contains 8 grains of explosive guncotton, the other 20 grains of magnesium, the third 3 grains chlorate potassium, and the fourth 2 grains finely powdered potassium permanganate. Immediately before use I mix the three last named ingedients by means of a goosequill brush on a piece of paper. Having found illumination to be most rapid and bright if the mixture is ignited centrally, I have constructed a very simple and effective contrivance somewhat after the type of an old-fashioned hand-lantern. The thing is made of tin, and one foot high; top and front are open, the sides are for better reflection diverging at an angle of 120 degrees, and the narrow back is provided with a handle. At the center of the bottom a small circular hole is cut, and in this is placed a small tin funnel with its tube projecting about half an inch below the bottom of the reflector. In the tube of the funnel I place a small wick of photographic pyroxyline, which protruding slightly above and below acts as a primer or fuse; next to this, in the apex of the funnel, I spread the guncotton, and over this the luminous compound. By holding the lantern in one hand and touching a lighted match to the pyroxyline protruding from the funnel-tube with the other, ignition of the entire mass takes place instantaneously, and face and hands are effectively protected against burns from erratic little flashes. For the illumination of an interior the lantern should be held directly above or at least very near the camera on either side, and a little behind it, as in this manner shadows which might prove obtrusive and objectionable will be thrown back of the principal objects, and the light should be elevated high enough to prevent shadows from being thrown upwards, as such an effect would appear rather unnatural.

As to the results obtainable with this artificial light, artistically and technically, I think that for indoor work they are at least equal, and in many instances far superior, to anything that can be achieved by daylight; and I fully coincide with the opinions of other experimenters that the rendering of particularly brilliant eyes, beautiful delineation and modeling of features, and greater chromatic correctness are striking qualities of the magnesium light. The cause of the peculiarly brilliant and plastic effects may easily be traced to the comparatively small source of illumination; and as to the property of giving truer color values, it is probably due to the fact that, notwithstanding the enormous actinic power of the magnesium light, its color is slightly yellower than that of the sun, so that the blues become subdued, and reds and yellows appear brighter from diminished contrasts.

Speaking of contrasts reminds me that I have observed a peculiar hardness and chalkiness in most of the magnesium photographs that have come to my notice. How and why is this, when softness and delicacy of detail, in light as well as shadows, are some of the most charming characteristics of this wonderful light? Most of the pictures that I have seen told their own plain story of too weak a light and too strong a developer. The remedy is obvious, and by reversing the relative proportions of magnesium and pyrogallol, results would no doubt be greatly improved.

Apart from the uses to which the new light may be applied in the studio and for the photographing of interiors, mines, caves, subterranean and submarine excavations, etc., I wish to call attention to the ease and certainty with which copying in the camera of any subject may be done by its aid. For commercial purposes this may, perhaps, be of but little value; for military operations, however, in which the speedy reproductions of plans, reconnoissance maps, etc., is often a condition *sine qua non*, this application, in conjunction with the reliable rapid bromide paper, is of such far-reaching importance that the advantages derived from it are of incalculable value. But more than that, landscape photography, in a limited sense, may be accomplished by means of the magnesium light to the attainment of extremely valuable information; and preliminary trials with rockets carrying a quantity of the luminous mixture have been sufficiently encouraging to entitle me to the belief that magnesium will play an important part in the warfare of the future, for photographing, under cover of the night, an enemy's works, or determining the position of hostile forces.

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HOPE you will make the BULLETIN as interesting in 1888 as 1887.

E. J. CHRISTMAN.

FLASHES FROM ABROAD.

Captain Eugene Himly, from Berlin, says about the development with hydroquinone: Many formulas have already been published, but they all lack rapidity, requiring generally from six to eight minutes. After manifold experiments the following process has proved to be very suitable:

Solution I.

Caustic soda	50 parts.
Sulphite of soda	50 "
Distilled water	400 "

Solution II.

Hydroquinone	50 parts.
Sulphite of soda	50 "
Distilled water	250 "

For use take 5 c.c. of each solution and 50 c.c. water, lay the exposed plate in this solution, and rock the tray sufficiently. A correct picture will appear in half a minute and the development will be finished in about three minutes. To avoid frilling, put the plate at once, without previous washing, into an alum bath; after some minutes wash and fix as usual. The solutions will keep for a long time. The use of alcohol to dissolve the hydroquinone is not to be recommended, the film assuming a yellow color; while without the same, clear negatives are the result, having much similarity to those developed with pyrogallol. The developer keeps about three-quarters of an hour, during which time it remains as clear as water and can be used for constant development. Pictures upon gelatino-bromide paper can also be developed in the same, but it is advisable to leave off the bathing in diluted acetic acid and substitute an alum bath.

By reducing the developer, softer pictures are obtained, but the development proceeds somewhat slower.

For the Practical Application of Magnesium Flash-light.--Mr. Paul Battin writes, in the *Deutsche Photographen Zeitung:* It is important to be able to effect the ignition of the mixture at any desired moment. Experiments with electricity have demonstrated their possibility, but they are at the same time difficult and particular. Another method has been tried by Mr. Battin, which he describes as follows: The apparatus can be adjusted easily in the lantern. The powder is ignited on a piece of tin, somewhat inclining towards the glass plate. Upon this piece of tin, not exactly in the middle, but a little nearer the back part of the lantern, stands vertically a large iron nail of not less than 10 c.m. length, which is held by two or three wire loops in its vertical position, but has free play upwards. Upon the head of this nail rests a weight of 200 to 300 gr., which, fastened to a wire passing through the back of the lantern, is so arranged that, the wire serving on the outside as a lever, it can be lifted by pressing the same downward. When ready to take a picture, nail and weight are raised a little and a fuse (paper cap) is placed exactly under the point of the nail, which is then slowly lowered again. The weight holds the cap in position and the powder can now be spread easily on the tin, particularly in front of the nail. The lantern is now charged. At the required moment the lever is pressed down, the weight falls upon the nail and the ignition takes place. The tin must be cleaned with a brush after each flash.

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All communications for the columns of the Bulletin *should reach us by Monday preceding the day of issue, to insure their publication at that time.*

[*From Photographisches Wochenblatt.*]

THE ILLUMINATION OF NEGATIVES FOR ENLARGEMENTS WITH THE CAMERA.

BY F. STOLZE.

That this question of illumination or lighting is indeed a leading one, is proven best by the many inquiries and letters I have received lately in regard to the same. Still, it seems rather singular as the problem is about as old as photography and has been answered practically, and more or less completely, since enlarged or reduced positives from negatives have been made. But, while in former times such work was regularly executed by only a few galleries, the great number occupying themselves only exceptionally with the same, the situation has changed now since the introduction of the enlarging paper. Photographers begin more and more to make their own enlargements, and there is a daily more increasing want for a secure and reliable method of negative illumination.

I will try to solve this question in a systematic manner. It is by no means sufficient for this purpose to determine only how the whole surface of the negative can be evenly illuminated, but it has to be shown, also, in what manner one can gain the assurance of correct exposure. This complicates the affair. It is clear that the cheapest and most powerful means of illumination—day and sunlight—leaves all to be desired in regard to equalness and proportionality, and that artificial light is to be preferred, if particular care cannot be taken. I will therefore investigate first the former and examine the arrangements necessary for the same.

A—Negative Illumination with Artificial Light.

The method of negative illumination, as applied in the magic lantern apparatus, is known. A strong source of light from a flame running into a point radiates upon a system of condensing lenses, which unites there to a luminous cone, whose base is formed by the lenses, while its top comes to about the place where the optical center of the projecting objective is. The question is now, How much of the light source used comes to actual application? To determine this, one has to understand clearly, first, that every source of light here in question radiates on all sides, and that it would therefore illumine quite evenly a spherical surface which surrounds it. By looking at any of the existing condensing systems, one will very soon find out that the angle of light which is surrounded by them and the center of the light source amounts to almost 50 degrees, and sometimes only 45 degrees. This is very natural. The quantity of heat radiated from the light source at an angle of 60 degrees being already so great that only by the use of intermediate glass partitions, which absorb much heat, a cracking of the condensing lenses in the middle where they are thickest and nearest to the flame can be avoided. To decide, therefore, how much is consumed by a light source in this manner, it is only necessary to determine how much from a spherical surface is cut off from the radius r by a cone whose top is in the spherical centre subtending an angle of 45 to 60 degrees. Such a piece of the spherical surface has now, as shown mathematically, the size $4\, r^2 \pi \sin.^2 \frac{\varphi}{4}$, while the spherical surface itself is expressed by the formula $4\, r^2$. If, therefore, the actually consumed intensity of light is called i, the whole J, one obtains the formula

$$i = J \sin.\frac{^2\varphi}{4}.$$

The result of this is, that when $\varphi = 60$ degrees to $\varphi = 45$ degrees, the value of i is only equal to 0.067 J to 0.038 J; that is, that by application of condensing lenses $\frac{14}{15}$ to $\frac{26}{27}$ of the light sources are lost, and that only $\frac{1}{15}$ to $\frac{1}{27}$ is actually utilized, aside from absorption of light in the lenses, which also takes place. This result may be most suprising to all who use such condensers and the question is how can that be remedied. The idea is at hand, that an attempt be made of increasing the quantity of rays falling upon the condenser system by a reflector arranged close behind the light source and which the sciopticon always has. But a short reflection teaches us that by this means one can have only a very moderate success, and practically it is shown that such reflectors will illumine the shadows, but never the lights, and that it is only necessary to apply somewhat thinner negatives to obtain exactly the same result without reflectors. The rays emitted from the reflector upon the condensing system approach much more to parallelism, and find, therefore, their uniting point not in the optical center of the projecting objective, but in a much nearer point. They cannot, therefore, cooperate in the formation of the projection picture, as long as they pass free and not diffused through the negative, only in the half tones, which will diffuse the light much more completely, they will lighten up according to their density.

After gaining this information one will be obliged to ask if the system of condensers is not based upon deception, and if better, or at least equal, results cannot be obtained by simpler means. With the reservation to publish in detail in the *Wochenblatt* a completely new, and in its action most surprising system worked out by myself, I will at first enter upon the means within everybody's reach.

If a piece of ground glass was placed between an ordinary condenser and the negative, it would weaken the light falling upon the condenser considerably, but the light reflected from a reflector behind the light-source would come much more completely to action. This leads to the idea, if perhaps it would not be better to renounce the condenser entirely and in place of the same to throw the light as completely as possible with the aid of reflectors upon a ground glass behind the negative. If, for instance, the light-source is surrounded from all sides—except the one where the picture is—with mirrors or reflecting surfaces, containing only openings for the necessary air, one can very well use up the whole light sphere with the exception of $\frac{2}{15}$ to $\frac{1}{10}$, that is, aside from the absorption, $\frac{13}{15}$ to $\frac{9}{10}$ of the whole light, and to throw the reflected rays upon a ground glass behind the negative. What now takes place there? The light is diffused through the mat surface in all directions of a half sphere, whereby, however, the quantity of the obliquely emitted light diminishes gradually, so that where the rays are parallel to the surface it is equal to 0.

For reasons not necessary to explain, here it may be accepted that about one-third of the light turns actually to value, whereby the picture generally, and not the lights alone, come into consideration. The conclusion is, that aside from the absorption, about $\frac{4}{15}$ to $\frac{3}{10}$ of the light comes in use with this kind of illumination. Of course, the lights proper do not have this intensity; the whole picture appears more gray, and for projection purposes, where the high lights play the principal role, this illumination would be less suitable; it follows then, that the position which is more necessary here, is more powerful, and that the light source is brighter. And here I come to the second important point of this method: it admits the increasing of the strength of light at pleasure.

While one is necessarily obliged to be confined to one light source when applying condensers, which, to become of value, should be pointed as much as possible, two, three and more separated light sources of any closer extension can be applied. This circumstance is all important in this method. In regard to the choice of light one is here entirely unrestricted. Gaslight of any kind, kerosene, lime light, electric light, magnesium ribbon light, etc., can be applied, and these light sources can be increased at will. The importance of this process is herewith entirely proven, as it appears to me, one being able to shorten the time of exposure at will.

One may be astonished that I have not mentioned here the magnesium powder light, but the explosive character of the mixture forbids a complete reflection of the rays. Still the flash powder is well suited for this purpose, provided one has suitable arrangements for the removal of the fumes. If the powder is set off at a certain distance from the ground glass surface, the reflector is not required, and the light intensity can be completely determined by the weight of the powder. The magnesium flash light is in this respect much simpler than any other; but the strong fumes will always form here a kind of difficulty, if one has not a suitable apparatus to confine them.

(*To be continued.*)

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PHOTOGRAPHY AND THE PRINTING PRESS.

BY H. TRUEMAN WOOD.

[Read before the Camera Club.]

ALL true printing processes may be classed under one or other of the three following heads: (1) Copper plate printing from an intaglio plate, which delivers the ink to the paper from lines incised into it, its clean and polished surface not transferring any mark to the paper; (2) Letterpress printing, in which the block delivers the ink to the paper from its surface, the hollows or recesses in that surface being lowered to such a depth below it that the paper does not touch their bottoms, and so receives no ink from them; (3) Lithographic printing, in which the whole printing surface is smooth and level, but part is of a nature to receive ink, which it transfers to the paper, and part is of a nature to repel the ink, so that it remains clean, and does not mark the paper which touches it.*

To all these varieties of printing, photography can be and is applied. Intaglio plates can be produced by its means, so can surface blocks. Not only is it a most important adjunct to lithography, but the whole type of collotype processes may, without much inaccuracy, be placed in this class. Woodburytype, that most ingenious and beautiful process, I am inclined not to regard as a true printing process, since it is really a mechanical method of producing castings of half-tone carbon prints; but if it is to find a place among printing processes in the narrowest sense, I would like to be allowed to class it with intaglio platee, since a Woodbury mold may be considered as an exaggerated plate, giving up its ink from its hollows, not from its surface. I would suggest that for soms future meeting you should secure a paper on Woodburytype from some one of the skilled operators who practice it, and perhaps you may even induce him to demonstrate the process before you.

The subject is so wide a one that I propose to confine myself mainly to a portion of it, the production of metal blocks and plates for printing in copper-plate or type presses, though I cannot altogether omit some references to the other kindred processes.

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* Slides illustrating the differences between the various classes of printing were shown on the screen.

The problem of producing a printing-block or plate from an ordinary half-tone negative is divided into two parts. First, it is necessary to turn the gradations of the negative into lines or dots which will hold the ink; and secondly, when this has been accomplished, it is required to produce a surface of some sort from which printing can be effected. With your permission, I will take the last half of the question first. I do not know, nor do I very greatly care, whether this method of proceeding may be the more logical; but I do know this, that I stand a better chance of making myself intelligible by adopting it.

Given, then, a line negative—a negative, that is to say, from a drawing, or engraving, or sketch, in line or stipple—anything, in fact, that will by any process give a print in ink, and let it be required to produce from it a surface block. There are many methods which might be employed. One of the most natural to present itself would be a modification of the old etcher's process.

You are probably all of you pretty familiar with the manner in which an etched plate is produced. A polished plate of copper is covered with a thin coating of material, the principal ingredient in which is wax, known as an etching ground. On this ground, which for convenience of working is generally blackened, the artist sketches his design with a fine point, laying bare the metal in the lines which he draws. When his sketch is completed, the plate is put into an acid bath. The acid attacks the metal in the lines, leaving untouched the smooth surface of metal which is covered by the wax. As soon as the biting-in is completed (and there are many details necessary to ensure success, on which I will not now dwell—such as covering up certain portions of the picture when the etching has proceeded far enough, and allowing the acid to act for a longer time on other parts), the etching ground is cleaned off, and the design then appears in incised lines on the smooth metal. To print from such a plate, ink is rubbed over the whole of it, and the surface is wiped clean, the ink remaining in the lines. When the paper is forced down upon the plate in the press it takes up the ink out of the lines, remaining clean where it has touched only the clean surface of the metal.

Apart entirely from photography, the process of etching has been adapted to the needs of the wood-engraver. Some few years ago, Mr. Bruce took out a patent for what he termed "White-line Etching," a process in which the acid is caused to eat away the metal from the parts which become the whites of the finished picture, so as to give a surface block. The artist draws on a zinc block prepared with an etching ground; but he draws in white, removing the ground from the portions intended to print white. As you may judge from the specimens exhibited, the process is capable of giving excellent results. I do not know whether it has come at all into use, but if it has not, it must be only because the rivalry of photographic processes has been too much for it.

To apply the etching method by means of photography, the first essential is a protecting surface corresponding to the etching ground, and capable of being produced photographically. Here the well-known sensitiveness to light of bichromated gelatine, or other mixture of an alkaline chromate with a colloid substance, may be pressed into service. If we prepare on a metal plate a film of bichromated gelatine, expose it under a negative, and develop it in hot water—if, to put it shortly, we develop a carbon print on a plate of zinc (remember we are dealing only with a line negative), we shall have pretty much what is required—a coating which will protect the metal under the lines of the finished picture, leaving the rest of the metal surface bare. But these lines of gelatine are but a poor protection from the acid, and it is necessary to reinforce them. How is this to be done? Simply enough, by the aid of the lithographic principle. You know that the lithographic process is based on the mutual repulsion of grease and water. A greasy stone cannot be wetted. A wet stone will refuse to take ink. If, then, a design be drawn in greasy ink on a lithographic stone, or on a plate of zinc, and the stone be then carefully damped all over, it will only take up the water where there is no ink. If next the wetted stone be rolled over with an inking roller, the lines will take up the ink, and be reinforced, while the wet parts will repel the ink, and will remain clean. Such, at least, is the principle, boldly stated; like a good many other things, it sounds simpler than it is in practice. The stone has to be carefully washed over with an acid solution of gum, and many precautions taken before the perfect result can be attained. Now, if we apply the same process to the gelatinous print on our zinc plate, the lines can be made much stronger, and capable of resisting the action of the acid bath. It would, therefore, appear that nothing more is required but to put the plate in the acid, and to leave it there until the acid has eaten away a sufficient amount to give the depth required—printing depth, in fact. So one might think—and so, indeed, thought the earlier experimenters with the process; but let us see precisely what will happen. When the plate is first placed in the acid, the bare metal will be attacked, and the acid will commence to dig out little pits or furrows between the protecting lines and patches of ink. But each of these pits has sides as well as a bottom, and there is no reason why the acid should confine its action to the metal at the bottom of the pit, where it is wanted, while it leaves untouched the equally exposed metal at the sides. If, then, the action is permitted to continue uninterrupted, the result is that the acid eats away underneath the lines of ink, thus undermining the protecting covering. The lines are therefore weakened, and become what is technically known as "rotten;" if they are fine lines, being thus attacked from both sides, they will probably disappear altogether.

For a long time this undercutting of the lines was the great difficulty in all these processes, but eventually it was surmounted, and the way in which it was surmounted was very ingenious. It was, I believe, the invention of M. Gillot, a Frenchman; and his process, originally know as Gillotage, is at the basis of the production of all etched blocks. It is, like most important inventions, extremely simple when you know it. After the first etching, the plate is inked over; then finely powdered resin or asphalt is dusted over the plate, which must be perfectly dry, when it adheres to the inked lines, but is easily shaken or dusted off the remaining parts. The plate is then gently warmed, the resin melts, and the mixed ink and resin run down the side of the furrow till they reach the bottom. As soon as they have gone thus far, the plate is allowed to cool, or is cooled as rapidly as may be. It is then subjected to a second etching, the depth to which the acid is allowed to penetrate being not more than the thickness of a sheet of note paper. Then the process is repeated, and so it goes on, with alternate etchings and inkings-up, until the requisite depth has been obtained, when the side of the furrow formed by the acid presents a series of little steps.* Very often, instead of developing the film on the plate, the coating may be first prepared on paper, and the picture transferred in the manner usually employed for lithographic transfers to metal for etching. This method is quite as important as the direct method; but I have not time to say more about it this evening.

But bichromated gelatine or albumen is not the only substance acted on by light in such manner as to render it available for our purposes. Another medium, most convenient, and one very largely used, is bitumen. In this process, the sensitiveness of resins to the light, a fact discovered by Niepce, is employed. A zinc plate, properly cleaned and polished, is coated with a thin and even film of bituminous varnish. Ordinary varnishes are rather slow in their action, though they give perfectly satisfactory results when there is no objection to a lengthened exposure. The asphalt varnish known as "liquid jet," answers admirably for experimental purposes, if it is diluted to about half its strength with benzole. When greater rapidity is required, the bitumen is first treated with ether, until all the portions of it which are soluble in ether are dissolved out. The insoluble residue is then dissolved in benzole, and a varnish obtained which is extremely sensitive to light. In practice, to secure a thin and even coating, a rapid spinning motion is given to the plate by some convenient device, so that centrifugal force drives the varnish out towards the edges and off the plate, leaving only a thin covering. A special whirling table may be used for this, or a convenient hand device, consisting merely of a clamp and a handle like that of a carpenter's brace, by which the holder with the plate in it can be rapidly rotated, is most frequently used. In practice, quite satisfactory results can be obtained by the use of a lathe, the plate, after being flooded with varnish, being rapidly secured on the face plate. This method for securing thin and even films is essential, whatever be the sensitive surface employed, if that surface is prepared by coating a metal plate.

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* The process was illustrated by diagrams on the screen (some copied from the *Photographic News*), and by an admirable series of examples of the different stages, kindly prepared for the lecturer by Messrs. Walker & Boutall.

After exposure under a negative, the plate is treated with a solvent—generally turpentine with a proportion of benzole. The turpentine is a slow solvent, the benzole a rapid one; and by a judicious application of these, great latitude of exposure can be secured. The parts unacted upon by light are rapidly dissolved, the remaining portions being left unaffected. I have never heard any reason given for this alteration in the nature of the varnish. The change would appear to be a molecular one; but, so far as I know, the reason of the action remains open to investigation. The after-treatment of the plate is the same as described above; the bitumen, however, is in itself sufficient to protect the plate for this first etching without the addition of ink.

There are, however, other means for producing type blocks by photography, n which etching is not employed. If a thick film of sensitized gelatine be exposed under a negative and soaked in water after exposure, we get what is known as a swelled gelatine relief, the unexposed parts, of course, swelling up, while the others remain unaffected. A cast from such a relief forms the model of a printing surface, from which, by a duplicate process of casting, or electrotyping, the actual metal printing-block is obtained; or, by a variation of this process, the gelatine, instead of being swelled, can be washed away entirely by hot water, and a mold from a cast of this sort serves for the production of the ultimate electrotype. The relief obtained by these devices is, as may be supposed, very slight, and it is usual to increase it in the whites of the picture by the addition of melted wax onto the mold from which the final electrotype is taken. A convenient way of doing this is to hold a piece of wax against a heated rod of metal, so that the wax may run down the metal and be guided by the point to the parts required. Messrs. Dawson, whose very ingenious wax process I must debar myself from describing, since it is not a photographic one, use, both for it and for their photo-relief process, a special pen, which is kept hot by a small gas-jet, and which allows the wax to be delivered with as much facility as ink is by an ordinary pen.

Quite recently, Herr Husnik, of Vienna, has made a new departure in the production of relief blocks by printing from the surface of the gelatine itself. Details of the process have not yet been published, and I have no practical knowledge of it myself. So far as I understand it, the film of sensitized gelatine, after exposure, is reversed, and developed in the same way as a carbon print; but instead of plain water being used, the developing solution is a saturated solution of bichromate. This, I suppose, has a further hardening effect upon the film, and it is also certainly a more energetic solvent of the soft parts than water. At all events, the film thus treated can be mounted upon a zinc backing, and when dry, used for printing with type.

It will now be clear that, by one or other of the above described processes, it is possible to obtain from any negative in line or stipple a block which can be used on an ordinary type-printing press; and as such a negative can be obtained from a picture of any character, it is evident that we have the power of producing a printing-block from any print, sketch or drawing of any character. A line engraving may be thus treated, or an etching or a pen and ink sketch made on purpose, or even a pencil drawing. Some years ago, when Mr. Hamerton published his well-known work on "Etchers and Etching," he was anxious to print as a vignette on his title-page a reproduction of an etching. To do this, he was then obliged to have a wood-cut made, and the job must, I should think, have been one of the most troublesome that the artist who executed it ever undertook. The production of such an illustration would at the present time be a bit of ordinary commercial work, and would be turned out by any one of a dozen or more firms at so many pence a square inch.

The next question is: How, from the ordinary half-tone negative, with every gradation of shadow between pure white and intense black, is it possible to produce a negative in which there is really only one gradation from black to white, the immediate shadows being represented by masses of broad or narrow lines, or of lines or dots at varying distances apart? The devices which have been employed to attain this end have been very numerous, and it is not difficult to understand that they may vary considerably according to the class of printing which is to be employed. If a surface block is wanted, the lines must be fairly bold and strong, the grain must be open, and the amount of relief should be considerable. If the printing is to be from an intaglio plate, very much less relief is required, and the grain may be very slight—indeed, sometimes it is sufficient to give merely enough tooth, or roughness, to the plate to enable it to hold the ink. For photolithography, again, a very fine grain or texture will suffice.

So little grain is wanted for an intaglio plate, that it is quite possible to produce a printing-plate direct from a half-tone positive; and it was in this way that the earliest plates were made by Talbot and others. Talbot's plan was simply to coat a copper plate with bichromated gelatine, and to expose it in the usual manner. The plate, after exposure, was placed in an etching bath. Where the gelatine remained soluble, the etching fluid passed through and attacked the copper below; where it was insoluble, it prevented the passage of the fluid, and the copper was entirely protected. In the parts where the insolubility extended to a less depth—that is, in the various ranges of half tones in the picture—the copper was attacked to a greater or less extent. The variations in relief thus obtained, combined with the tooth or roughness given by the natural action of the etching fluid, was sufficient for printing purposes. Many of the modern methods are founded on this same principle, but additional means are generally employed for giving the required grain.

Of the various means employed to attain the desired end, I believe that the majority may be arranged under one or other of the following two heads: either the print from the negative is taken on a sensitive surface capable of being made to show granularity in one shape or another, or the half tones of the original picture are broken up in a purely mechanical fashion by imprinting on the sensitive surface a uniform grain or tint or net work. As a rule, this breaking up is effected by interposing a screen on which a suitable "tint" has been photographed between the negative and the sensitive surface. Such a screen may be obtained by copying the lines printed on paper from a specially ruled copper plate.*

Now, it is really very difficult to give any clear reason why this chopping up a picture into little squares—a device which is said by calumnious critics to produce a result like looking at a picture through a gridiron—should have the effect it does. The precise devices employed to produce the really marvellous results which are produced by its aid are, for the most part, trade secrets. Various patents have been taken out, but you will have to study those patents a very long time before you will get much information out of them. Skill and ingenuity, clever manipulation, and a knowledge of minute details—wrinkles, in fact—are the main factors. To judge of the results, you have only to look at the very interesting collection of examples which the kindness of the principal makers and users of process-blocks has enabled me to show here this evening.

One great difficulty in the use of these process-blocks—and the methods with which we are at this moment dealing are practically employed almost entirely for surface-blocks—is the extreme care and very great skill which are required in printing them. As you may see by the specimens of the blocks themselves, exhibited this evening, they are all extremely shallow. An ordinary printer, given a process-block to work from, generally succeeds in producing nothing but a black smear, and the illustrations which are now so successfully used in many of our illustrated papers reflect, in fact, more credit on the printer even than on the maker of the block. For some time foreign countries had the advantage of us in this respect, but our printers are now becoming fully alive to the importance of processes, and they are, I am glad to say, showing themselves quite capable of making the best use of them.

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* Diagrams showing the nature of the screens used, and the effect of their application to a half-tone negative, were shown, and these were followed by a number of slides from pictures produced by certain of the processes in which a screen is used.

We may next consider those methods in which the print is taken on surfaces capable of showing a grain. You are probably aware that the bichromatized film, when wetted, has a property of reticulating or covering itself with minute vermicular markings. This tendency is increased by the addition to the film of a deliquescent salt. The character of the reticulation varies considerably, according to the nature and properties of the film, and its amount varies with the amount of exposure to light. Where the gelatine is unaffected by light, it is thoroughly soluble, and there will be no reticulation. In the highest lights, again, the gelatine will not swell, but remains unaffected by the water; and here, also, there is no reticulation. In the shadows the reticulation will be graduated; it is slightest where the light has acted slightly, and it increases till it begins to merge into the solid shadows.

We have, therefore, after exposure and soaking, a film with the high lights raised and smooth, the middle tones partly raised and grained, and the solid blocks depressed and smooth. A cast from this represents a typographical block. It is not easy to electrotype from wet gelatine, so that it is better to take a cast from the gelatine and reproduce this by a double electrotyping, or by a second casting. The picture on the screen is a reproduction of a print from an old Pretsch block, and shows very well the way in which the grain works itself into the details of the picture. Pretsch's process is one which really gives very satisfactory results and it is not extremely difficult. One of the earliest to carry out work on the lines laid down by Pretsch, and to produce actual commercial results, was Mr. Dallas. Mr. Dallas' process is a secret one, and I have no knowledge whatever of the way in which his results are attained. They are, however, very similar to what could be got by modifications of the Pretsch process.

To the same class of processes belongs the modification of Captain Abney's papyrotype, recently introduced by Sergeant-Major Husband, and known as Papyrotint. It is a transfer process. The print is taken on paper sensitized with bichromate mixed with ferricyanide of potassium and common salt, a mixture which certainly produces a very nice smooth grain. The process is intended for photo-lithography, and it has the great advantage to the amateur of having been very fully and clearly described. The photograph which I show may serve for comparison, but a better judgment may be formed of the results by an inspection of the full series of specimens, which I owe to the kindness of Captain Maycock.

Another method of introducing texture into the sensitive surface has been the introduction into it of some granular material. That ingenious and prolific inventor, the late Walter Woodbury, mixed crushed glass or other powder with the gelatine, and ultimately got a printing-plate by electrotyping. Methods of this nature give a very flat and uniform grain, as might be expected; and this led Colonel Waterhouse to seek for what he termed a discriminating grain, which should be closer in the shade than in the high lights. He sifted waxed sand over a wet gelatine relief which had been developed on a metal plate, the sand having been stirred up in melted wax till all the grains had been coated with the wax. When the sand was dusted off, after the relief was dry, it was found that the little pits made by it were deepest in the thick parts of the relief, and shallower in the thinner parts; where the metal was bare no sand had adhered, and a smooth surface was left. From the plate thus prepared an electrotype was taken.

A modification of this method was introduced by Mr. Sawyer, of the Autotype Company, and described by him before the Photographic Society. Powred graphite was introduced into the film, in order to improve the conducting alities of the material, and render the electrotyping easier.*

If what I have said has not been enough, at all events the collection on the lls of the Club will suffice to show how great and how valuable a power has en placed in the hands of the artist by the union of photography with the inting-press. On the one hand, he can be absolutely certain of having ything he likes to draw in line reproduced in absolute fac-simile. Of urse, it will only be in fac-simile. The camera will not touch up reless work, render in accurate and delicate line the sketchy indications the pencil or the brush, but that is not the fault of the camera. There ust be one artist to the work, not two. The first man must do all the work, t leave half of it to the wood-engraver. And then consider what freedom the ocess gives him. The wood-engraver is closely limited by the trammels of his t. By dint of the greatest skill and ingenuity, he has overcome the enormous fficulties inherent in the very nature of the art, but the limitations are there all e same. Every day gives the proof. Look at the illustrated papers, at the agazines, at the newest illustrated books, everywhere we find that free sketches, produced by processes in which photography has generally a share, are taking e place of the older wood-cuts. Or ask the wood engravers. The whole class engravers on wood are, I am very sorry to say, suffering under the competion of the new processes. That this should be so is surely a distinct loss except at we can hardly doubt that the artistic faculty will find fresh means of expressg itself as the older fashions give way to the new; but it is no use denying the ct.

And so far as drawings in line are concerned, to stigmatize the new methods s mechanical seems to me to be simply ridiculous. They are no more mehanical than the ancient method of etching, in which chemical means were and re employed to fix into metal the very handiwork of the artist. To me they eem absolutely less mechanical than the very art of wood-engraving itself, when is pursued by anybody else than the man who has actually drawn the picture hat he is carving on to the wood.

When it is a case of the translation into a printing surface of a wash drawing nade for the purpose, or of a picture in color, the case is of course different. Iere the epithet of mechanical is more truly deserved;. whether any harm is lone by the epithet is another matter. It is a handy term of abuse, and that is ll. We may appeal to the facts. The finest of the photogravures shown this evening prove beyond question that by one means or another the most delicate gradations of light and shade can be rendered in a graduated stipple or tint. Yes, says the enemy, but this is hand-work. Well, so far as it is hand-work, it is at east not mechanical (take whichever horn of the dilemma you please), but, as a fact, the accusation is only partly true, while, if it were wholly true, it would not matter. What is to be considered is the result. As a matter of photographic nterest, we set great store by an untouched plate. As a matter of artistic value t does not appear to me to matter a whit whether photography has done more than serve as a basis on which some skillful craftsman has worked. It may make all the difference in the cost of production, but once produced, the picture ought to be considered on its own merits.

When it comes to the reproduction of photographs direct from nature, we are dealing with a different condition of things altogether. Let me make a clean breast of it. I never could fully appreciate the art of building up photographic pictures by the aid of models. I admire to the full the genuine artistic powers displayed by many who devote themselves to this most difficult branch of photography, as well as their technical skill. I should be proud if I could myself turn out work half so good. Nevertheless, I never can be quite happy over it. It always smacks of the green room. The photographer can do no better than his models, and they, for the life of them, cannot help sitting for their likenesses and showing it. You can pass a vote of censure on me if you like, *Liberavi*

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* To illustrate this part of the lecture slides were shown from pictures produced by the methods mentioned, by Messrs. Dawson's process, by Messrs. Goupil's photogravure process, etc.

animam meam. After all, perhaps, you will admit that the best picture, the picture that appeals most to the human mind, will be that which has the impress of the human mind upon it, and that no mere transcript of natural facts, however beautiful and however accurate, can appeal so readily or so swiftly to us as the picture which has been translated for us through the intervention of the artist's mind which tells us, not merely what there is for us to see, but what the skilled eye saw and what the clever brain selected as best for us to see.

This, however, is not the point for discussion this evening. I have been endeavoring to indicate to you the methods, or some few of the methods which have been employed to render as permanent pictures in printer's ink the productions of the photographic camera. I hope I have convinced you that whatever can be photographed can be reproduced on a printing surface capable of being used for any of the purposes of the printer. I hope, also, that I have shown those artists who are present that they have no cause to fear the competition of this branch of photography. So far from this, they ought to, as many of them do, regard it as a valuable means of popularizing their work, and as a most useful aid in giving expression to their ideas.

As one man can best express himself with the brush, another with the burin, a third with the etching-needle, and a fourth with the graver, why should we not have a yet newer school who will work within the limits laid down for those whose sketches are to be reproduced in the camera?

Why, again, should not a mezzotint engraver be content to take a plate on which as much work has been done by photography as photography can do, and work it up to the best possible point?

This is really the way in which artists should regard the photographic methods. They should accept them as allies. The time for sneering at them has gone by.

[*From Year-book of Photography.*]

GUNTHER ON CAPTAIN PIZZIGHELLI'S NEW PLATINOTYPE PROCESS.

PROBABLY all photographers are sufficiently familiar with this process to know that in printing the platinotype paper the image which appears is not brown or purple, but of a faint greyish-yellow color, and therefore it is rather difficult to judge whether a print has had sufficient exposure in the frame, as may be done in the case of albumenized paper.

To remove this drawback, which to some degree has been prejudicial to the popularity of this printing process, Captain Pizzighelli—to whom we are indebted for much valuable information on the subject of platinum printing—has made many experiments, but only recently has he succeeded in finding out a method of producing platinotypes directly in the printing-frame without development.

The principles of this method are the following:

First.—If to the sensitizing solution certain vehicular substances are added, this solution will be prevented from penetrating into the body of the paper.

Second.—If to the sensitizing solution one of those substances which serve as developers is added in the very beginning, a reduction of the platinum salt takes place directly in the printing-frame by atmospheric influences.

The advantages of the new process are therefore very important, as there is no longer a necessity for a preliminary preparation of the paper, and as you can judge of the exposure as accurately as with silver. Besides this, the development of the paper is entirely omitted. A simple, short washing of the prints, first in acidulated, then in ordinary water, is sufficient for finishing the pictures.

Sensitizing the Paper.—For coating, Rives or Saxe paper may be used, either glossy or with a mat surface.

Solutions of gum-arabic and of arrowroot have been found the best vehicular substances for the sensitizing liquid, but the former has proved to give better results than the latter. They are mixed in the following manner:

No. 1.

Gum-arabic	50 grams.
Distilled water	100 c.c.

No. 2.

Arrowroot	2 grams.
Distilled water	100 c.c.

The latter is boiled in the usual manner to paste. Before use mix—

Sensitizing liquid	2 parts.
Gum solution 1	1 part.

Or,

Sensitizing liquid	1 part.
Arrowroot paste 2	1 "

The mixture is well stirred until it forms an entirely homogeneous liquid, and then it is filtered through muslin.

The coating and drying of the paper, and its storing in tin cylinder boxes, in which dry calcium chloride is placed, is the same as in the case of the old platinotype process.

The sensitizing solution is prepared as follows: To the normal ferric oxalate solution is added in the dark room, and keeping the dish rocking, as much of neutral ammonium or sodium oxalate as will just dissolve at the ordinary temperature.

A—AMMONIA FERRIC OXALATE SOLUTION.

To normal ferric oxalate solution[*]	100 c.c.
Neutral ammonium oxalate	18 to 20 grams.

OR B—SODIUM FERRIC OXALATE SOLUTION.

To normal ferric oxalate solution[*]	100 c.c.
Neutral sodium oxalate	15 to 18 grams.

By formation of the corresponding double salt the brownish grey color of the ferric oxalate changes to a beautiful emerald green. If the solution begins slightly to darken, this will indicate that the saturation is completed. As soon as this takes place, no more ammonium or sodium oxalate should be added; keep the dish rocking for some further time, allow to set, and then filter.

Preparation of the Above-mentioned Ferric Oxalate Solution.—For the preparation of this solution of ferric oxaiate the following operations are necessary: (1) Manufacturing the ferric hydrate; (2) dissolving that substance in oxalic acid; (3) determining the amount of iron and of oxalic acid contained in this solution; (4) diluting and acidulating the same. The method of preparing ferric hydrate is generally well known, but for the sake of completeness we will give a brief description of it. Ferric chloride, 500 grams, are dissolved in from five to six litres of water, and when the solution has been brought to the boiling point, solution of soda is added until it gives with litmus paper a distinctly alkaline reaction. For this purpose about 250 grams of caustic soda will be found necessary. The precipitate is then washed with hot water by decantation, until the wash water is no longer alkaline. It is next placed in a cloth, and by pressure freed from the greater part of the water. With the ferric hydrate thus obtained, which ought to have a syrupy consistency, there should be mixed about two hundred grams of finely crystalized oxalic acid, and the mixture be then left to itself for a few days at a temperature of not more than 30 degrees C., and in a place completely protected from the light; under these circumstances the formation of ferric oxalate will go on steadily. Some persons recommend the promotion of this process by digesting the mixture for some time at a high temperature. This we are decidedly opposed to, since, by heating for even a very few hours to 50 degress or 60 degrees, the salt will be partially reduced to a ferrous oxalate. At the commencement the solution has a pure green color; by a continued digestion it turns yellowish-green, and finally greenish-brown. When this moment has arrived the remaining ferric hydrate should be filtered off, and the solution be submitted to a quantitative chemical analysis."

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[*] The above directions for making the ferric oxalate solution are a little difficult for a nonchemist to follow, but this solution, and also the chloro-platinite solution, can be obtained from our publishers.

Although the determination of the amount of iron and oxalic acid contained in the solution is one of the simplest of analytical operations, we tried at first to dispense with it. Closer investigation, however, proved how necessary it is to confine the relations between rather narrow limits, in order to insure the success of the platino-ferric process. Now as ferric oxalate cannot be prepared in a stable form, so as to have a constant composition, there remains no other way than that of determining the composition of the solution by analysis, and then diluting it to the required degree. Further, it should be noted that any quantity of the solution may be prepared at once, and then kept in stock.

From the analysis we ascertain the quantity of ferric oxalate contained in 100 c.c.m. of the solution, as well as any slight excess of oxalic acid which happens to be present. The liquid is then diluted with so much distilled water that every 100 c. c.m. of it may contain 20 grammes of ferric oxalate [Fe_2 $(C_2O_4)_3$]. Crystalized oxalic acid is then added, until, with the free acid already in the mixture, that substance amounts to from 6 to 8 per cent. of the ferric oxalate already in the solution—the normal ferric solution.*

The solution for sensitising may be mixed as follows:

Chloro-platinite of potassium solution (1 part to 6 parts of water)	24 c.c.
Ammonia ferric oxalate solution, or sodium ferric oxalate solution	22 "
Gum solution I	25 "

If ammonium oxalate be added, the prints will be of a more bluish tone: whilst, by the addition of sodium oxalate, they are rendered more brownish. The former gives somewhat softer prints than the latter. As to the sensitiveness, there has been found no marked difference between the two salts.

No definite statements can as yet be made regarding the keeping qualities of the new paper, as since the perfection of the new process only a few weeks have elapsed; but the samples kept within this period remained unchanged.

Chlorate of potash may be added with the effect of increasing contrast, and this may be done in the same manner as with the old platinotype process.

The above-given quantity of the sensitizing liquid is sufficient for five sheets of the ordinary size. The exposure of the paper no longer offers any difficulty. As the results will be more satisfactory if the paper possesses a certain degree of surface-moisture (as in the case of silver printing) it will be well to take the sheets to be worked a few hours before use off the tin cylinder, and to hang them up in the dark room. In placing the paper on the negative, it is, with this process of course, not necessary to place behind it a sheet of vulcanized india-rubber sheeting or a piece of waxed paper.

In printing and finishing the picture the following modifications are allowable:

First.—The printing is carried on until the image has appeared in all its parts. The picture when taken out of the frame should not be darker than what it should be when finished.

Second.—The printing is only continued until the picture is in general visible; but the delicate half-tones are still wanting. The picture is taken out of the frame and kept separately. In about half an hour or two hours' time the picture will be finished by itself, as the reduction of the platinous chloride, once introduced, is continuous, in the dark. Or, the picture is developed out with a cold, diluted solution of sodium carbonate.

A good solvent is the following:

Saturated solution of soda carbonate...	5 c.c.
Distilled water..	100 "

Into this solution is immersed the picture, and allowed to remain until all the delicate details are to be seen, which will require only a few seconds.

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* To perform this analysis a few c. centimeters of the solution are measured off, and the oxalic acid then determined from measure by means of permanganate of potash; the amount of iron in the same liquid may be ascertained in the same way, after reduction by means of zinc. But it is, perhaps, more convenient to determine by weight the iron in a separate portion of the solution; this can be done by evaporating, heating to redness, incinerating with nitrate of ammonia, and weighing the ferric oxide which remains

Third.—Printing is continued about as far as with the ordinary platinotype paper; *i. e.*, until only those parts of the negative which are clear glass, or nearly so, are distinctly visible, then developments carried on as with ordinary platinotype paper.

The pictures printed according to one of the methods 1, 2, 3, are placed into

Hydrochloric acid	1 c c.
Water	80 "

and allowed to remain there until the yellow color of the ground of the paper has disappeared. Then they are for ten to fifteen minutes washed in two or three changes of water.

By publication of his experiments Captain Pizzighelli has undoubtedly rendered a great service to the many friends of the platinotype process, which stands now as one of the simplest and most attractive photographic printing processes.

I hope that what I have given here has been sufficient to enable those who may feel so disposed, to make a few successful experiments with this beautiful and so much improved process.

[*From Rochester Democrat and Chronicle, Feb. 10, 1888.*]

A DISASTROUS FIRE.

On February 10th, at 2.20 A.M., an alarm was sent in from the dreaded box 37, at the corner of Mill and Platt streets. Every member of the department understands that, as a general rule, that number means a disastrous fire, and no time was lost in responding. Ten minutes later a general alarm was sounded and the reserve apparatus ordered to the scene.

The fire was found to be in the large brick building on the west side of State street, below Platt street, occupied by the Eastman Dry Plate Company, for the manufacture of photographic plates and bromide paper.

The building is five stories high, and from the nature of the process of manufacture has but few windows. The fire originated in one of the chemical rooms, and smouldered unobserved for some time. Owing to the lack of windows referred to, the work of the firemen was seriously hampered, as the fire could only be reached through two small round windows in the rear of the building and the few windows on the sides.

Two or three hydrants were frozen, but finally several streams were applied. At one time it was thought that the fire was under control, but it soon ate its way through the floors and at 3.25 o'clock the flames burst through the roof.

A fire-proof brick wall separates the rear and front portions of the building. This wall extends from the cellar to the roof, and at 3.30 o'clock Chief Bemish expressed the hope that the front portion of the building could be saved.

At 4 o'clock the fire was still beyond the control of the firemen, and the total destruction of the building was threatened.

Shortly after 4 o'clock the flames burst from the windows in the third and fourth stories. The flames burst through the roof and ran down the elevator well in the front portion of the building. The firemen were driven from the building and at that hour it was thought impossible to save any portion of the plant.

The fire originated in the fourth story, and the stories below were heavily stocked with valuable dry plates prepared for the use of photographers, and also a very large stock of bromide paper for photographic printing. The expensive machinery used in manufacturing the products will doubtless prove a total loss. The building was valued at from $35,000 to $40,000, and was fully insured. The stock and machinery were partially insured.

At 4.30 o'clock the fire was substantially under control. The front portion of the building was not extensively damaged. The rear is gutted.

BROOKLYN ACADEMY OF SCIENCE—PHOTOGRAPHIC SECTION.

To the Editor of Anthony's BULLETIN.

THE first meeting of the Photographic Section of the Brooklyn Academy of Science was held in their rooms, Warner's Institute, corner of Willoughby avenue and Broadway, Tuesday evening, February 14th.

A paper on "Sunlight and Silver in Photography" was read by one of the members.

The section is not yet organized, and the Board of Directors of the Academy cordially invites those who are interested in this branch of science to co-operate with them.

The members of the section will have the advantages of dark room, chemical laboratory, and the benefit of a chemical education if desired.

Those wishing further information can address

A. A. CARDWELL, *Secretary,*
15 Lawton street.

KEEPING ALBUMEN PAPER AFTER SENSITIZING.

DEAR BULLETIN:

I NOTICED in a Charleston (S. C.) paper a paragraph which said that to remove moisture from a closet, "Put a piece of unslacked lime in an earthen crock, and its affinity for moisture is such that it will make the air dry." If such is its effect, would it not be worth the experiment of trying it to keep sensitized albumen paper from discoloration, as it is generally understood that this is caused by dampness in the air to a very great extent? INQUIRER.

THE TREE CAKE.

THE manufacturers of the N. P. A. albumen paper have again sent us one of the delicious cakes, peculiar to Germany, known as the "tree cake."

It resembles in shape a mortar, but is not used to fire bombshells, as the first shot would break it in pieces, but is kept in warlike shape to preserve the peace, like the German army.

MARRIAGE.

MISS MARY, daughter of George Wilkinson, Receiver of the Newark Savings Institution, was married to William Cooper Cullen at the Park Presbyterian Church, February 8th, by the Rev. Dr. J. Clement French. The bride wore a dark brown traveling suit. There were no bridesmaids. The ushers were R. C. Cullen, brother of the groom; John D. Mills, Charles J. Morrison and George H. Tappan. A reception was held at the house of the bride's parents, No. 334 Belleville avenue. The bride received many handsome and costly presents.

OUR ILLUSTRATION.

THE handsome photogravure with which we illustrate this number of the BULLETIN is from a negative by Mr. Clarence M. Fowler, taken on a Carbutt special plate. The picture is exceedingly artistic, and the rendering of it by the Photogravure Company, of New York, exhibits some of their best work. The details in the foliage and the exquisite delineation of the fine graduations of light and shade mark it as one of the best pieces of this work we have seen for some time.

ANTHONY'S
Photographic Bulletin.

EDITED BY
Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.,
and a corps of practical assistants.

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Advertisements should reach us not later than the Saturday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, six, twelve or twenty-four issues.

E. & H. T. ANTHONY & CO., Publishers.

ST. LOUIS ASSOCIATION OF AMATEUR PHOTOGRAPHERS.

ST. LOUIS, February 7, 1888.

THE regular meeting of the association was called to order by *President* BAIN, with eleven members present.

The minutes of January 17, 1888, were read and approved as read.

Several letters from Mr. George Bullock, of the Cincinnati Camera Club, were read by the Secretary; these gave a full account of the origin of the Lantern Slide Interchange of 1885, through the personal efforts of Mr. Bullock, and Messrs. Beach & Lawrence, of the New York Camera Club. He gave the history of the Interchange down to the present time, and concluded by making two suggestions: (1) A conference of delegates from the various societies represented in the Interchange, to be held either in New York or Philadelphia, about the 20th of February. (2) That each society arrange to receive two sets of slides monthly, instead of one, as at present.

After a full discussion, on motion of Mr. H. B. Alexander it was resolved, "That the association do not send a delegate to the proposed conference, as there is no member whose business engagements will, at this time, permit him to leave the city."

A letter from Mr. Edward F. Wilder, Secretary of the Boston Camera Club, was read, announcing that they had appointed a committee of three members to prepare a critique on the St. Louis Lantern Slides, and requesting similar action on the part of the St. Louis Association.

The request for a critique was referred to the Lantern Slide Committee, with instructions to comply with their wishes.

The *Secretary* read a letter from Messrs. Willis & Clements, of Philadelphia, which was accompanied by a dozen platinotype prints, sent to the association as specimens of that process. The Secretary was directed to acknowledge the receipt of same, and to tender the thanks of the association therefor.

Applications for active membership were received from Messrs. J. F. Valle, W. B. Potter, Alfred M. Baker and John M. Desloge. These were referred to the Membership Committee for investigation.

Mr. EDWARD MASSOT read a paper on "The Utilization of Silver Residues," which called out an interesting discussion. The paper was illustrated by specimens of metallic silver recovered from the residues of printing.

A vote of thanks was ordered to Messrs. E. & H. T. Anthony & Co., and to the Scovil Manufacturing Company, for copies of their publications for 1887.

Dr. C. H. GOODMAN and Mr. GRAY STAUNTON were selected by the Executive Committee to prepare the papers for the March meeting.

Mr. BUTLER gave notice of a proposed change in the Constitution, regarding the subject of "Honorary Members."

The *Secretary* reported that he had, in his official capacity, deposited the funds of the association in bank; also read a letter from Messrs. H. Greenwood, of London, offering to send the *British Journal of Photography* to the association for 1888, on receipt of the necessary postage.

The *Secretary* was instructed to remit the postage, and to express the thanks of the association for their kindness.

Rev. C. M. CHARROPIN, the *Vice-President*, tendered his services as Librarian, which were accepted with thanks.

The *Secretary* was authorized to purchase binders for the periodicals.

There being no further business, the association adjourned to meet on Tuesday, February 21, 1888, at 8 P.M.

After adjournment, the lantern slides of the Philadelphia Society of Amateur Photographers were exhibited to the members present.

William Butler, *Secretary*.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

Regular Meeting, February 7, 1888.

President Newton in the chair.

The *Secretary* reported that he had received for the section the first number (for 1888) of the *Bulletin* of the Photographic Society of the North of France; the December number (1887) of the *Journal and Transactions* of the Photographic Society of Great Britain; the January number (1888) of the *American Journal of Photography;* and the January numbers of Anthony's Bulletin, and Scovil's *Photographic Times*, for all of which the usual vote of thanks was tendered by the section.

The Chairman of the Executive Committee announced that at the next regular meeting, Tuesday, March 6th, Mr. E. C. Townsend would give a lantern exhibit of pictures collected from different parts of the world for the special purpose of entertaining miscellaneous audiences, whether in this country or in the old world.

On Wednesday evening, February 15th, there would be an informal meeting in the lecture room of the Institute, at which time it was expected that Mr. G. D. Milburn would demonstrate the Film Negative and Transferotype process. All interested in this new phase of photography were cordially invited to be present.

The *Chairman* then said: "Ladies and Gentlemen, the programme for this evening is a paper on Photography, by the Vice-President, and a miscellaneous lantern exhibit by members of the section."

President Newton called the attention of the section to a letter just received from Mr. John Carbutt, relative to the making of lantern slides, to which he replied by saying: Mr. Carbutt takes issue with something he thinks I said at our meeting in December. What I did say, I will now read, as reported in Anthony's Bulletin. (Reads the report.) Mr. Carbutt bases his objections to my position on something he supposes I said about using slow special dry plates. I will quote from his letter: "I have noticed in report of proceedings of Photographic Section American Institute, your remarks on what you consider has been a mistake all along in using slow special made plates for lantern transparencies, as both myself and many of the members of the Philadelphia Photographic Society take the opposite view."

I do not know where Mr. Carbutt has seen a report such as he alludes to; and will say, if there is such a report, it is erroneous, as I have made no statement such as charged in his letter. The report I have just read is substantially correct, and may be found in Anthony's Bulletin for December (1887), page 764.

I invite Mr. Carbutt to read it for reliable information, especially my remarks on lantern slides. He will find I make no allusion to "slow or special plates." I am combating what not only appears to me as radical defects in slides furnished by dealers, but the fundamental idea of the requirements of slides. I do not know of any dealers in this city who keep for sale, as a rule, slides made on any kind of dry plates. My impression is, that they all prefer those made by the bath process, and will accept no others, except where it is imperative to fill their orders. I go back beyond the time that gelatine plates were introduced. I did say that any plate or process by which a good negative could be made was capable of making a good positive or lantern slide. I still hold firmly to that view.

Mr. Carbutt further says: "I have, with the friendliest feeling, sent you, through the *Photographic Times*, a challenge." As I have not read for a long time the journal he refers to, I am ignorant of the nature of the challenge; but, if it is the same as contained in his letter, he can hardly expect me to accept it, as it is made under a misconception, on his part, of the drift of my remarks.

I admit without any hesitation that Mr. Carbutt can make as good slides as I can if he proceeds on the idea and suggestions contained in my remarks under consideration. The main difference between us is that he believes I cannot make as good slides as he can. Perhaps I cannot; but that as a matter of fact, would depend, perhaps, almost wholly on our perception of qualities requisite from an artistic point of view. Mr. Carbutt will please remember that my remarks had special reference to landscape slides; and it is pictures of this class where the feeling and cultivated eye of the artist demands consideration.

As regards the true merit of such work, is it not better to submit to the decision of experts in this branch of art rather than a miscellaneous audience, the majority of which are, perhaps, neither artists nor photographers?

My proposition was to submit fifty slides made by myself, and for some one to furnish fifty made by the old system and ideas, to be judged by three competent artists. Any friendly competition of this sort I shall be pleased to consider.

Mr. Newton also exhibited by means of the lantern a dozen or more slides illustrative of the subject under consideration, and thus won the hearty applause of his auditors.

The rest of the evening was occupied in reading a paper entitled, "Photography: Its Requirements and Capabilities," by J. B. Gardner. The excellence and entertaining character of this paper won the approbation of the audience, and at the close of the reading a unanimous vote of thanks was tendered to its author.

On being solicited to have the paper published, Mr. Gardner said he had another use for it, and must, therefore, decline for the present this flattering testimonial of its worth.

Mr. O. G. Mason, by means of the lantern, exhibited and explained a new and ingenious plate-holder, and invited those interested in this unique piece of mechanism to examine it for themselves after the close of the meeting.

At 10 o'clock the section, on motion, adjourned.

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

A STATED meeting of the society was held February 1, 1888, with the *President*, Mr. FREDERIC GRAFF, in the chair.

The Committee on Membership reported the following as having been elected: William N. Jennings, Dr. William H. Trueman, James Wilson, Charles F. Butler, Henry T. Bailey, Henry Ayres.

The Executive Committee reported that satisfactory progress was being made with the new room, and it was hoped that the next regular meeting could be held there. A lease had been drawn and signed, dating from the date of occupancy.

A vote of thanks was extended to William H. Walmsley & Co., and Wilson, Hood & Co., for their kindness in presenting to the society the "American Annual of Photography," "British Journal Almanac," and "Photographic Mosaics," all for 1888.

Dr. Charles L. Mitchell read a paper entitled "A Neglected Method of Silver Printing" (see next BULLETIN), and showed in connection with it some very fine specimens of prints upon plain paper. A discussion followed relative to the merits of a combined fixing and toning bath for such prints. Mr. John C. Browne stated that while he did not altogether approve of such a method, he had in his possession some prints made and treated in that way in the year 1856, and that they were apparently as good now as when new.

Mr. Bartlett thought by fixing first, and then toning, it was possible to regulate the tone better, the red color being a good basis to build upon.

Mr. Browne called attention to the danger in the use of some of the makes of flash powders for photography at night; containing, at times, chlorate of potash, sugar, nitrate of potash, bichromate of potash, and picric acid, in addition to the magnesium; the resulant was a highly dangerous explosive compound. Several members thought that the fumes arising from the combustion were irritating and might be injurious.

Dr. Mitchell did not regard the smoke as a source of danger, the visible portion being principally calcined magnesia.

Mr. Carbutt and Mr. Bartlett stated that their powders were very simple in composition and entirely free from danger if properly used. The powder should be fired by a long taper from the side, or by an automatic arrangement, so as to insure the hand of the operator to be at a safe distance.

Mr. Bartlett mentioned that a more natural expression in the eye could be obtained, where flash powder is used for portraits, by having the room well illuminated by gas or lamplight, as the flash, when it comes, does not appear so vivid to the sitter.

Adjourned.

JOHN G. BULLOCK,
Secretary pro tem.

PHOTOGRAPHIC SECTION OF THE ROCHESTER ACADEMY OF SCIENCE.

AT the regular meeting, held February 14th, the "Genesee River" was chosen as the subject to be illustrated at the prize contest to take place May 8th. Andrew S. Clackner's name was placed on the roll of members. The Secretary then gave a demonstration of the making of platinotype prints, beginning with the making of the salts and ending with the development of the prints. This last part gave the greatest satisfaction, as some of the prints developed were furnished by Messrs. Willis & Clements, and even the demonstrator did not know the subjects. The look of surprise that greeted the almost instantaneous appearance of the image, as well as the remarks, gave an indication of the favorable impression the process had made. A number expressed their desire to try the process. The subject for next meeting was not decided upon.

Yours truly,
MILTON B. PUNNETT,
Secretary.

THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

REGULAR MEETING, JANUARY 10, 1888.

(*Continued.*)

Now, gentlemen, I am ready for business.

Mr. READ—*Mr. President:* I move that the Constitution as amended by the Board of Directors be adopted as an amendment to the original Constitution of this society.

Mr. STEBBINS—I second that motion.

Dr. PIFFARD—*Mr. President:* I move an amendment to that motion, and it is that the Constitution be amended as follows:

I will ask the gentleman (Mr. Reed) who moved the adoption of the Directors' Constitution, or, rather, the Constitution as amended by the Board of Directors, whether he would be willing, after hearing the following proposed amendments, to accept the amendments and permit additional amendments to be made to those if necessary?

Dr. PIFFARD then read in this connection one or two of his proposed amendments and said: "I now ask Mr. Read whether he accepts the amendments, so that amendments, if necessary, can be made to what I have read?"

Mr. READ—So far as I know I—

Mr. CANFIELD—*Mr. President:* I rise to a point of order. I make the point that an amendment to the amendments as proposed and as known as the Directors' Constitution, if I understand it correctly, is the only thing that can be acted on at this meeting. Under the provision of the Constitution under which we are now living, a distinct provision is made for the introduction of any amendment, addition or alteration to the Constitution. That addition, alteration or amendment must be submitted to the Board of Directors and must pass that body. The language of the article is explicit, and it says it shall first be submitted to the Board of Directors, and, if approved, it shall be submitted to the society at a regular meeting, and should then come up for action at the succeeding regular meeting. It seems to me that language could scarcely be plainer as to the intent of this section. Although some of us may think it is not just, nevertheless, it is the Constitution we are now living under, and I make the point of order, that it is not in order to consider the amendment which has been proposed. And I here call attention to the fact that in the Directors' Constitution, so called, in the article on amendments, it is distinctly stated (page 10) as follows: "Amendments to the Constitution shall be presented to the club for ratification and must be ratified or amended by vote of not less than two-thirds."

This indicates that the same construction that I placed on our present Constitution was placed on it by the framers of the proposed new Constitution.

Dr. PIFFARD—I would like to reply to the point of order that the gentleman has raised.

It is a universal custom that when amendments are proposed by a committee to an assembly for ratification, that amendments to the proposed amendment are in order, and I ask the chair to rule on the point.

Mr. BEACH—The form of practice of this society in making amendments to this Constitution has been as cited by Mr. Canfield. The only time that the Constitution was amended was in May, 1886. At that time an amendment was proposed at one of the regular meetings and read by the Secretary; at the next meeting the amendment was unanimously passed.

The *President*—The chair is asked to rule on this point, and if I do not state it right, please correct me. The Directors having submitted a Constitution here, as an amendment to the original Constitution, Dr. Piffard offers an amendment to the Director's Constitution—in other words, an amendment to an amendment. Now, I shall hold (for I have considered this point; I was quite sure it would be made, for I would have made it myself), I shall hold that so long as you gentlemen do not bring in new matter not dealt with by the Constitution submitted by the Board of Directors, that it is not necessary to refer such second amendments to the Board of Directors. If you do bring in any new matter not considered by the Board of Directors at all, then you have to refer that and submit it to the Board of Direction, as if it had never been before the Directors at all, nor before the society.

Now, gentlemen, I say that in all honesty, and after consideration, believing it to be correct; and it remains with you to sustain the Chair or not.

Mr. CANFIELD—I appeal from the ruling of the Chair, and ask for a division on this ground. Your decision is quite correct as to new matter introduced; but, if I heard correctly, the amendments to the amendment omitted certain matters which are treated of in the Directors' Constitution, and omissions may be just as vital as additions. I call for a division.

Mr. BUSSING—Dr. Piffard moves that these be taken in toto—that all of these things have got to be taken in the gross. I think they ought to be taken section by section, and not swallow the whole thing at once.

If your ruling does not prevail, then we have got to take this just as it is here. If we want to strike out one word we cannot do it. If there is accidentally a grammatical error or a word spelled wrong in it, we have got to take it and put it in our books. It is nonsense, sir. I have had some experience in matters of this kind, and I hope all the members present will sustain your ruling on this point.

Dr. PIFFARD—I call for the question.

The *President*—Of course, I was persuaded to that view of the case, because if a word had been omitted—we never would come to a conclusion. One man might block the whole business for five years. It is not a question that is debatable.

Gentlemen, the decision of the Chair has been appealed from, and now the question arises as to whether you will sustain the Chair or not in its decision. Those who are in favor of sustaining the Chair will kindly rise.

(The Chair was sustained by a vote of 35 to 7.)

The *President*—It is now moved that the amendments offered by Dr. Piffard be considered section by section.

Motion carried.

Dr. PIFFARD—Mr. *President:* It is now fully eighteen months since the question of the revision or amendments to the Constitution began to be agitated. It is fully eighteen months since a number of gentlemen, in looking over the Constitution of our society as it now exists, and as it has existed substantially from the beginning, found matters which they seemed to think improper to be in the Constitution—matters which seemed to them to trespass upon the natural rights of the members as they existed under corporate laws; matters which gave the Board of Directors almost absolute control of even the minor affairs of the members in their connection with the society, and which contained matters which gave the Directors the power to decide the meaning, even, of every passage in the Constitution, and which further gave the President the power to control the affairs of the members themselves. If any gentleman thinks I am overstating these facts, I think I can make it clear by reading from the Constitution and By-Laws. As I say, it is eighteen months since a number of gentlemen considered the question of having a revision of as much as possible of the Constitution and By-Laws. After various meetings and conversations among them, some few changes were decided upon and they were submitted to the President of the society, and by him were laid before the Trustees and Directors. The Directors made the revision which has been presented, but which in some particulars do not fully meet the views of some of the members. Other gentlemen united in making a fresh draft, which has been presented this evening, and which is now before you by a vote of the society for consideration, section by section. I would suggest, Mr. President, to facilitate business, that the sections be read consecutively until an objection is made to some of them, and then that a vote be taken on all that have been read previously to the one that is objected to. If that method of procedure is adopted, it will clear up that amount of work; then let the ones to which objection is raised be discussed, and let them be settled in any way that the assembly thinks best and proceed. I think in that way it will save considerable time.

(Dr. Piffard then read Article I, changing the name of the organization to the New York Camera Club.)

Mr. CANFIELD—I object to that.

Dr. PIFFARD—I move the adoption of Article I, Section 1, which provides that the corporate name of this organization shall be The New York Camera Club.

Mr. STEBBINS—I move that this meeting either go into a committee of the whole, or in some way take action, that we can informally vote on this action until we get a consecutive idea of the whole thing, and afterwards we can vote on the amendments.

(*To be continued.*)

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

Q.—C. F. P. writes: In a recent number of an English journal there is a translation of an article by Captain Pizzighelli "On a New Plantinotype Process." I have been in doubt as to the salt used and appeal to you. The salt in question is put down in the article as the "Chloro-platinite of potassium," while in another place it is called a "platinous chlorite." Can you tell me what the salt is, and whether it is the one sold under the name of "platinum and potassium chloride," or whether it is a salt used only in this process? Can it be obtained in this country?

A.—The salt used in the new platinotype process is a platinous, not a platinic chloride. The one you mention as for sale is *not* the right chloride, it is a potassio-platinic chloride, and it is nearly insoluble in water, while the salt Pizzighelli uses is soluble in six parts of water. It is not a trade product at present; but we believe our publishers have made some and have it for sale; you should write them about this. It can be made by reducing platinic salts, but the process is rather troublesome.

Q.—G. C. F. writes: I notice the English market is full of sensitized papers, besides albumen paper, and highly recomended as being superior to albumen sensitized paper, and is considered there as the perfection of silver printing. I refer to "The Obernetter gelatino-chloride of silver emulsion paper," "Edward's X L sensitized paper" the "perfection of silver printing" and "Aristotype paper." There are quoted cheaper than and far superior to albumen paper. Please inform me where can these be purchased in this country.

A.—We have not used any of the papers you refer to, and we no not know anyone on this side of the Atlantic who has. But we think that the merits of the papers are somewhat overrated, and that albumen paper is yet without a rival; otherwise we should hear more about their use from commercial houses in Europe.

Q.—E. K. G. writes: What is the best way to curtain a skylight of clear glass? The light faces north and is 8 x 10 feet; the distance from floor to light at lowest point of skylight above the side-light is 15 feet, and the slope is about 35 degrees. I want as much light as possible, but also wish softness. A brick building stands 25 feet from the side-light and is half a story higher than floor of studio. If ground glass is used, would too much light be lost? In using clear glass is it necessary to have any screens on outside of building?

A.—The best arrangement of curtains would be three for the eight feet width, or four for ten feet, with Hartshorn spring rollers, the curtains each running on two tightly stretched wires that are arranged to come below the curtains and about eight inches from either edge. We should not advise ground glass, as too much light is cut off by it on dark days. An outside screen on the skylight is very good in hot weather, as by this means the studio can be kept cooler than without it, for such parts of the skylight as are not in use can be kept covered and the sun's heat kept out.

Q.—G. P. writes: In the BULLETIN of Febuary 26, 1887, is reported the meeting of the Amateur Photographers of New York, during which meeting Mr. de Witt C. Hoover showed the members the best way to work the new ferrotype plates by the Phœnix Plate Company. In the course of his remarks he said that the secret of the Phœnix stock solution No. 2 would be given away this year, 1888. As I expect to use them in a country far from America, it would be inconvenient to carry secret solutions, and I cannot make any success with them with any developers of my own. I shall be thankful for any help or information upon this subject.

A.—We have communicated with the Phœnix Plate Company and they decline to make public the ingredients of their stock solution No. 2, as it has cost them considerable time and money to perfect it.

Q.—A. A. J. writes: Inclosed please find two prints that show mottle, on coat of one a dark mottle and on background of each a white speck or mottle. We use bath 60 grains as usual and have silvered from one to three minutes, yet the result is always the same.

A.—This trouble is evidently caused by the bath or paper or both being two cold. See that bath and room are at 70 degrees F.

Q.—C. E. V. writes: Please tell me how to dry a paper negative without cockling. I squeegee paper on rubber plate, previously interposing sheet of plain paper between negative and squeegee. In spite of this, it cockles so badly that when pressed flat in printing-frame, there are wrinkles around the entire margin.

A.—Try smearing a piece of clear glass with good sperm oil, rub it off pretty thoroughly and squeegee upon the oiled surface. By this means you can squeegee your negative paper very flat and it will dry so. When perfectly dry raise one corner with a penknife and it can be readily removed having a handsome, glossy surface.

Q.—W. B. S. writes: I beg leave to ask your assistance in the following, regarding my silver prints. I use "N. P. A." Ex. Brill.

Pense Paper. Silver three minutes on about a 50-grain bath (not acid). Fume twenty minutes with ammonia. Toning bath as follows:

Gold	1 grain.
Water	8 ounces.

Make alkaline with carbonate of soda. Fix in 8 to 1 (of soda) hypo bath. I take every precaution and care, but for all that, my prints do not have the brilliancy and crispness that I notice in other photos. I get a nice dark tone, but they are not brilliant. If you can help me to correct any mistakes, you will greatly favor me. Should the silver bath be acid or ammoniated?

A.—If you will send us some prints we can see better what your trouble is. The silver bath may be neutral or only slightly acid.

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Views Caught with the Drop Shutter.

We are sorry to learn of the fire which occurred in the Eastman Dry Plate & Film Co.'s factory in Rochester, and we are in sympathy with any one who is thus embarrassed by being burned out, if only partially. As we have had the experience ourselves, we know how hard it is to adjust insurance and resume business, and what the loss is, even if we are insured fully, as embarrassments that occur delay any plans that you can make until the matter is fully settled with the insurance; but we are very glad to announce that our publishers are fortunate enough to have stock enough of bromide paper on hand of their own manufacture, with which they can supply moderate demands of the trade.

The Photographic Stock Dealer's Association of America held a meeting in New York, since our last issue, at the Grand Central Hotel. We have not learned what the details of the meeting were.

We are indebted to the *Photographic Times* for a very handsome calendar which adorns our office. We tender our best thanks to the able editor for his kind remembrance.

A. B. Paine & Co., of Fort Scott, Kansas, send us a handsome small quarto catalogue of their photographic supplies. It contains about 200 pages of fine illustrated lists of photographic requisites, and should be in the hands of every photographer that is within range of Fort Scott.

Mr. A. Hesler, of State and Randolph streets, Chicago, is the oldest photographer in Chicago, and still continues to keep up with the times. He has lately introduced carbon portraits with much success, and his studio is always kept up in an artist manner.

In the last issue of the *Philadelphia Photographer* is a capital child study, a print from a process block from a negative by Edsall, the well known New York photographer. The subject is the youngest son of Colonel V. M. Wilcox, of our publishers, and is a first-rate type of young America.

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Evening Post Job Print, N. Y.

PRINTED ON N. P. A. EX. BRIL. PAPER.

Noted Characters,

of the Stage.

BY

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ANTHONY'S

Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

MARCH 10, 1888. Vol. XIX.—No. 5.

COLUMBIA COLLEGE EXHIBITION.

THE third annual Exhibition of Columbia College Amateur Photographic Society took place in the Chemical Museum of the School of Mines, on March 1st and 2d, and was decidedly the most interesting and important exhibit of photographic work yet made by this thriving and industrious amateur society. About four hundred pictures were in the collection and the best work, of which there was plenty, was equal to any exhibited at any other exhibition we have seen. When we consider the amount of truly hard work these students have exacted from them by the college authorities, it is very pleasant to know that their leisure moments are devoted to our beautiful art, and to the production of such evidences of skill and fine taste as were found upon the walls of the museum where the pictures hung.

We cannot afford to spend much time and space on each exhibit, but the work was so unusually good and such an evidence of the advancement of the society, that some comment is necessary. Without regard to the prominence of any individual exhibit, we will take note of the pictures as they hung in the collection.

The first one we saw was that of Charles E. Colby, the instructor in organic chemistry. Here we found fifteen pictures, 5 x 8 and 4 x 5. As an artistic study the "Child Feeding Chickens" was a little gem. "A Picnic in the Woods" was an admirable out-door group. Another fine group was a number of children, the photographic work of which was excellent; but the arrangement of the subjects a little scattered. In this exhibit were two excellent portraits: one a gentleman reading a newspaper, the other an exceeding fine profile of an elderly lady, the latter being uncommonly good in every way; the use of a dark background being very effective. We must not forget an unusually fine interior in this exhibit, being the organic-chemistry laboratory of the School of Mines; this picture showed an excellent management of the light and was beyond criticism.

Mr. A. C. Gildersleeve had a large and handsome exhibit, covering almost every phase of photographic work in about fifty pictures. Scenes on Lake Mohonk, Groups, Cattle, Waterfalls, Instantaneous Street Scenes, and many other subjects made this exhibit a very fascinating one, and hard to get away from. One curious picture, was a life-size portrait of a bull-frog, which had an uncom-

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monly realistic appearance. A group of ducks swimming, taken instantaneous, was very good. Another good picture was a number of elephants in Central Park, New York. A fine instantaneous view was a scene in New York Bay, with the Statue of Liberty in the distance and ocean steamers riding through the waves. One of the best groups in the whole exhibition was in this collection; it was fifty-three students of the Class of '89 of the School of Mines, taken on a Stanley Plate with an E. A. Rapid Lense. We cannot conceive a group very much better than this one, every face being clear and well defined. It is a first-rate example of what can be done with a second-rate lense in skillful hands. We cannot leave this exhibit without noting an exceedingly hypothetical picture that we saw in it. This was a group of nine students sitting on a bench in the angle between the Chapel and the School of Mines, everyone with a book and a very studious air. This is decidedly too good to be true and is probably preraphaelite.

A collection of five pictures, 6½ x 8½, the work of Julian T. Davis, Jr. were very good. The coast scenes with cliffs were excellent, and the interiors very fine indeed ; we should like to have seen more of the work of this exhibitor.

Mr. J. S. Hoyt also had a small exhibit, six pictures, of some very good work. The surf at Montauk, Long Island, was excellent, the transparency from the same negative being a perfect gem. Scenes in Central Park, New York, were also very good ; a transparency of the bridge being excellent. A number of interesting pictures were scenes in the operating room and wards of St. Luke's Hospital, all of which were well done. This exhibitor also showed a number of good examples of pictures made by the magnesium flash-light.

Mr. Henry R. Taylor had a number of pictures, 4 x 5 and 5 x 8, principally scenes at Newport and Narragansett Pier. The Casino at Narragansett was very good, also the interiors on 5 x 8 plates. Some excellent groups of subjects in costumes were an interesting part of this exhibit and very well caught.

One of the most interesting collections in the exhibition was a series of photomicrographs by Dr. L. H. Laudy. These were twelve pictures, on 6½ x 8½ plates, and reminded us of the work of Colonel Woodward. Indeed, we do not see that they differ in any way from the work of this noted photomicrographist. The collection embraced wood sections, diatoms, marine algæ, and some remarkable enlargements of blood corpuscles, one plate showing a magnification of twenty-five hundred diameters. These pictures were among the most interesting in the exhibition. In the same collection were a number of pictures of scenes along the coast of Nova Scotia, showing the extraordinary rise and fall of the tides in that region.

There are a number of other exhibits that we must notice, but our space in this issue of the BULLETIN is so crowded that we must leave these until our next number.

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EDITORIAL NOTES.

MR. W. I. LINCOLN-ADAMS, the editor of the *Photographic Times* sends us a print from a negative taken with the magnesium flash-light, giving the scene in Delmonico's Dining Room at the recent dinner of the Press Club. We think the feat was a bold one and pretty successful, but predict that he will do better next time; the picture lacks detail in the shadows.

THE exhibition of Columbia College Amateur Photographic Society was the most successful one yet given by this association. It was well attended and the members of the society may feel justly proud of the good work they have accomplished. We shall say more about this exhibition in another place.

AT a conference of the delegates from various amateur photographic societies of the United States, recently held in Philadelphia, an association was organized called the American Lantern Slide Interchange, each society being represented by one member. We give on another page the report of this conference, for which we are indebted to Mr. R. H. Lawrence, the delegate from the Society of Amateur Photographers of New York.

ONE of the most remarkable achievements with the magnesium flash-light is the taking of about fifteen hundred people—the entire Twelfth Regiment of New York, band, guests and audience, in their armory, at 9 o'clock at night. This was accomplished by Mr. George G. Rockwood, of Union Square, this city, on the evening of Thursday, February 16th, using a 14 x 17 Stanley plate. The negative is a good one, and shows the capabilities of this new development of photography.

A LADY amateur and subscriber to the BULLETIN has succeeded in producing some elegant groups of a class of gymnasts in the rooms of the Athletic Association of Roseville, Newark, N. J., at 9 P. M. The lighting being produced by two of the photogenic pistols and magnesium cartridges. Every face in the group, covering a 5 x 8 plate, is clear and distinct, and the building beyond sharply defined with good details in the shadows. The negatives were developed with the hydroquinone developer.

THE following officers of the Philadelphia Amateur Photographic Club were elected for 1888: *President*, F. A. Cunningham; *First Vice-President*, P. P. Chase; *Second Vice-President*, J. V. Alteneder; *Recording Secretary*, Alfred Clements; *Corresponding Secretary*, Alfred Thompson; *Treasurer*, W. P. Buchanan; *Directors*, L. K. Perot, Howard Pusey, J. V. Alteneder, F. G. Stuart, W. P. Buchanan, Edmund Stirling, W. Super, Jr., Alfred Clements, Alfred Thompson, W. A. Haines and P. P. Chase. The society is doing good work in organizing a series of lectures on photographic subjects and also practical instruction.

WE are indebted to Mr. P. E. Carriere of the New Orleans Camera Club, for notes on the work of the society. In another place we shall give a more extended notice of the club.

WE have just received a very neat little expression of good will from our friends in Australia. This is a reduced photograph of an artistic diploma of the Amateur Photographic Association of Victoria, on which is inscribed, "Hoping that the New Year will be a prosperous one for photography, and that it will bring continued prosperity to the BULLETIN." Our distant friends will please accept our thanks for their kindly greeting, and every good wish for their own prosperity.

WE are indebted to Professor Edward C. Pickering for an interesting series of lantern slides, which we shall be pleased to notice in our next issue.

[*From our Special Correspondent.*]

ENGLISH NOTES.

THE magnesium light is still, in British circles photographic, the leading topic of discussion. My own experiments indicate that it is better to use the metal alone, in the finest possible powder, than to mix it with either gun-cotton or any other chemical compound. It is necessary to blow it through a flame or combination of flames, of sufficient extent to secure the perfect combustion of the magnesium; and for want of such a flame many experiments are unsuccessful. A simple method is to buy a "thistle-flunnel" at a chemists' supply-store (it costs but a trifle), and heat the glass tube and bend it completely round, so that it forms a loop in the middle. Twist some copper wire round the thistle-head, bringing the wire out in a spiral in front of the glass tube. Fill the spiral with cotton-wool, and soak it in methylated spirits. This will give a long, hot flame when ignited. Place ten grains of powdered magnesium in the loop of the glass tube and fasten a piece of rubber tubing to the small end of the funnel, then a puff down the tube will drive the magnesium through the flame of the burning spirits, and a brilliant flash will result. A large piece of white cardboard, bent into a semi-circle and placed behind the light, makes a capital reflector; and a white sheet, on the shadow side of the sitter, will help also. Keep the sitter a good distance in front of the background, to avoid strong shadows.

I have read of few madder things than the recent attempt to photograph Mdlle. Senide, the lady lion-tamer, with her head in a lion's mouth. Of course the flash startled the animal, and the involuntary motion of his head and paws was sufficient to rather seriously injure the lady. This incident occurred at Dublin last week, and, while the newspapers are blaming the lady, I blame the photographer. The aggravating point, however, is that no one seems to know whether the negative turned out a success or not—probably not.

A London lantern maker, W. C. Hughes, has just completed a very fine aphengescope (a lantern for showing opaque objects by reflected light) for the new college, Princeton, New Jersey. It gives a good picture of objects as large as two feet square, having an object-glass eight inches in diameter. The same maker has just finished ten "projection lanterns" for the evening classes of the London School Board, the instruments being made so that almost all ordinary experiments in electricity, magnetism, etc., can be performed upon a horizontal glass plate, and shown magnified upon the screen.

A quarter of a century ago the great Belgium chemist, Stas, showed that in studying the modification of silver bromide it was necessary to experiment in a room lit only by red or yellow light. Dr. Guttermann, of Gottingen, has recently proved the same thing with respect to chloride of nitrogen. He finds that this yellow explosive compound is really composed of two chlorides, which are decomposed by sunlight. Hence further light on this dangerous substance can only emanate from the dark room.

I hear that the great Lick telescope has received its "correcting" lens for photographic purposes, and that during the present year the famous Californian refractor will get into proper working order. Well, we have a rival preparing to emulate its feats in the form of a magnificent reflector, whose mirror of silvered glass is no less than five feet in diameter. This is the work of Mr. Ainslee A. Common, the wealthy London merchant, and is being erected at his house at Ealing, where it will be affected, alas! by the fogs and smoke of the metropolis.

But the first professional maker of reflecting telescopes in the world, Mr. G. Calver, of Widford, Essex, writes me that he is in correspondence with an American gentlemen on the construction of a seven or eight-foot reflector, and that he sees no impossibility or even serious difficulty in the construction of such a mighty instrument. One thing is certain, that the practice of astronomy is being revolutionized by photography.

During the last few months one enterprising British dryplate maker has offered valuable money prizes—some open to amateurs only, some open to all—for the best pictures secured on plates, paper, etc., of his manufacture. It is reported that this procedure has quadrupled the sale of his productions. But I should like here to protest against amateurs receiving prizes in hard cash. As an old athlete, bicyclist, cricketer, etc., I can state that in any ordinary competition of skill, strength, etc., the receipt of money prizes causes a man to be at once transferred from the position of an amateur to that of a professional, and why should it be otherwise in photography?

I should also like to express my opinion on a matter which has been lately again brought to the front by Lord Robert Grosvenor, the son of our wealthiest peer, the Duke of Westminster. Lord Robert appeals to all amateurs to sell as many of their photos as they can, and send the cash to him for an orphanage in which he is interested. But I think we ought to be just before we are charitable; and although I will not assert that every penny spent in this way would be so much loss to the struggling professional—and times have been very hard to the professional photographer in these islands for the last ten years—yet I feel sure that if such a plan were generally adopted it would interfere seriously with those to whom our loved art is a stern reality and means of livelihood. The relations between amateurs and professionals in photography were never more kindly and pleasant than they are now; and that they may long continue so is the earnest wish of

TALBOT ARCHER.

P. S.—The new (fifth) edition of Captain Abney's "Treatise on Photography" has just been published by Messrs. Longmans. As a single book of moderate dimensions (8vo., pp. xvi and 368), this is the most complete and satisfactory text-book on the subject with which I am acquainted.

[*From Photographisches Wochenblatt.*]

THE ILLUMINATION OF NEGATIVES FOR ENLARGEMENTS WITH THE CAMERA.

BY F. STOLZE.

(*Continued.*)

THE question, which way the reflecting surfaces have to be formed to give the greatest possible effect, is not easy to answer, but it is also of less importance han it at first appears. If only a single point light-source is to be used, one approximately parabolic reflector would be the most advantageous. But as soon as more than one light-source is to be brought into use, a mathematical derivation of the form is no longer possible and we will have to be satisfied with general principles. As a first rule, it follows that the light-source has to be surounded pretty completely by the reflectors and the negative, the inclosure being nterrupted only by the necessary openings for the removal of the products of ombustion and supply of fresh air. The second rule is, that the reflecting suraces have a suitable inclination towards each other and the negative, to throw all rays most completely and ultimately upon the negative, no matter whether they are reflected on their way or not. A moment's thought shows that, to gain this purpose, the reflecting surfaces should nowhere be parallel, as all the light falling vertically would become lost. It follows also that an extension of the light-spaces towards the negative is of more advantage than the contrary. One will give it therefore the form of a short cone, whose base is formed by the negative; or, this being always square (four-cornered) the form of a short, four-sided pyramid, whose upper and lower ends are perforated with the necessary corresponding openings for the air. By reducing these openings to a minimum, a maximum of light-intensity is obtained. If the pyramid has no large ground surface, that is, if it is intended only for negatives of moderate size, it is best to arrange the several light-sources, not side by side, but behind each other, standing therefore axial to the camera.

So far about the form of the reflector. A far more difficult question is the material to be applied, where general considerations are of no use, and only definite facts, determined by tests, can serve as a rule. And here we meet at once a deplorable deficiency. There exist, of course, data about the light absorption by different reflecting surfaces, and a number of them can be found in Dr. Eder's Year-book, pages 49 and 50, Tables 56 and 61. Unfortunately this validity is not for the photographically, but for the optically active rays, provided one can speak in general about an absolute validity of the same; for a simple comparison of both tables shows that they do not give corresponding values even for mercury mirrors, and a critical examination of the figures in Table 56 does not reveal their entire correctness. The conclusion therefrom would be, for instance, that the light of two candles standing close together, illuminating a strip of paper placed behind the same, and appearing as between the two when correctly looked at, so that when seen from a sufficient distance, to neglect its distance from the candles, it should appear lighter than these. But this is by no means the case, as shown by experiment. A purely theoretical examination leads also to the same result. A mat white surface diffuses the light striking the same, spreading it in all directions, so that it is imposible to reflect 50 per cent. of the light in a vertical direction, as should be the case, corresponding with the arrangement of mirrors.

Table 56 gives either wrong, or not comparatively correct figures, the same not having been obtained under the same circumstances, and not having been compiled according to uniform principles. My own experiments induce me to accept the latter. White paper is by no means the most complete white reflector, and absorbs, indeed, about twenty per cent. of the striking light. A much better reflector is a sheet of glacé cardboard, coated with a thick layer of baryta white; a plate of plaster of Paris forms also a surface of brilliant white, particularly if flowed upon a piece of fine plate glass and removed after setting and drying. In such plates the necessary air-holes can easily be scratched in with the help of a compass, and reflectors can be made from those, correctly cut, and protected by exterior frames or cases; or, from an exterior wooden case and an interior plate glass pyramid, a complete mould can be formed, producing the reflector in one piece, into which the air holes are cut.

Such a mat-white plaster of Paris or baryta surface is actually composed of numerous colorless microscopic crystals, in which the light is reflected by inner reflection. The deeper it penetrates the more complete is the reflection, and it is diffused again in all directions after escaping. Very little light is lost hereby, provided the layer is thick enough. As in the foregoing case, no parallel, but only diffused light is required—the direct rays being intentionally diffused through a ground glass. Almost all the light falling upon such mat-white surfaces is, in fact, absorbed by the same. Not being able to escape from the reflector-box, and reflected everywhere, with the exception of the air-holes and the ground glass, by far the largest part of the same has to act upon the ground glass, and therefore also upon the negative.

One circumstance has to be taken into consideration about these reflectors: The influence of the heat of the light-sources upon the material of the reflector. Mercury mirrors resist very badly, and silver mirrors are, in this regard, much better. Baryta card board is browned, on account of the glue it contains, at a heat of 150 degrees C.; and plaster of Paris loses, between 250 and 300 degrees, the last of its crystal-water, crumbling to powder. Such high temperature hardly ever occurring, plaster of Paris might form a very desirable reflector, particularly as the surface can always be sprinkled with water after use, and in this way be restored. I have kept them this way for a long time.

One of the most important questions now is, what means to use for the diffusion of the light-rays. The direct rays of the light-source being made harmless and useful only in this way, it is necessary that the diffusion of light should be a complete one. Two different interests here enter into conflict: the more complete the diffusion is, the more light is absorbed, and *vice versa*. The corresponding light-reduction, with the means generally at disposal, is shown by Table 56 of Eder's Year-book, namely: for coarse ground glass of 1.5 to 3 mm. thickness, 50 to 60 per cent.; for fine ground glass, 12.5 = 17 per cent.; for porcelain glass of 1.5 to 3 mm. thickness, 60 to 70 per cent.; while crown glass of 3 mm. thickness will retain 13 per cent. Porcelain glass, as will be seen, although it would be the most suitable material on account of its complete light-diffusing power, could, on account of its strong light reduction, only be made use of where very intense light-sources come into consideration; and where great light power is not a consideration, coarse ground glass has almost the same disadvantages without the advantages of porcelain glass. Fine ground glass finally may be advantageous with regard to the light power, but many direct rays pass through the same, as known by every photographer. There we have to look for a compromise. I have found glass, finely ground on both sides, to be the most advantageous. The light absorption, no second glass plate being added, will amount at the highest to 25, sometimes only 20 per cent., while the light-diffusing power is almost as great as that of the porcelain glass. If the direct loss of light taking place here is compared to that with condensing lenses, it will be found that with the latter it is at least just as great and generally much larger, being quite natural, considering the thickness of these lenses, which are doublets. The light-conditions with double ground glass for diffusion of light have to be considered therefore as very favorable.

Regarding the light-source to be applied, little can be said about it; conditions generally governing the choice. For kerosene-light round burners, known under the name of general burners, and well constructed, are applied with advantage. Those who use gas may take the albo-carbon burner, which gives a still whiter and photographically more effective light; and still more suitable on account of its color is the incandescent electric light. Electric light may find application in the form of arc light or incandescent light; the latter offers the advantage, that air openings are not necessary and that the several incandescent lamps can be arranged in large quantity in rows above each other.

Magnesium ribbon may be burned in narrow spiral bands, being in glass cylinders passing vertically through the reflector-box. The draught formed thereby removes quickly the small quantity of magnesium fumes. An arrangement for lime-light requires also no air openings of any account.

Regarding the exposure, it is of course always the the same for the same negative under suitable arrangement of the artificial light-sources and with the same kind of sensitive films. Still it might be recommended, to determine for each negative the correct relative time of exposure in such a way that it is printed in the ordinary printing frame upon albumen or emulsion paper and that is determined with the aid of any photometer. The ordinary scale photometers are fully sufficient for this purpose. In this manner, knowing for a normal negative the relative number of exposure as well as the absolute time of lighting in the enlarging apparatus, the absolute time of lighting can easily be found for every other, and much time and expense can be saved thereby.

(To be continued.)

THE LITERATURE OF PHOTOGRAPHY.

BY W. JEROME HARRISON, F.G.S.

(Continued.)

(32.) Knowledge. An Illustrated Magazine of Science plainly worded, exactly described. Conducted by Richard A. Proctor. 4to. 1881–88.

No. 1 appeared November 4, 1881, as a weekly, price 3d. Published by Wyman & Sons, 75 Great Queen Street. Eight volumes appeared in this form, but in Vol. IX, commencing November 1, 1885, the publication was changed to a monthly, price 6d. Publishers, Longman, Paternoster Row.

Mr. A. Brothers contributed a series of articles on "Photography for Amateurs" to Vol. I; and Mr. Slingo has contributed notes on the same subject to the later volumes.

(33.) Liverpool Photographic Journal (The). Conducted by some members of the Liverpool Photographic Society. (Messrs. Berry, Forrest, Corey, F. Howard, etc.) Three vols., large 8vo, 1854–56. Monthly. (No. 1 published January 14, 1854). H. Greenwood, 16 Canning Place, Liverpool.

Continued as

(33 *a.*) Liverpool and Manchester Photographic Journal (The). New Series. Bi-monthly. Two vols. (IV, V). (Also called "New Series, vols. 1–2") 1857–58. Large 8vo. Edited by William Crookes from January 1 to May 15, 1857. By T. A. Malone, from June 1, 1857, to February 15, 1858. By George Shadbolt, from March 1, 1858, to 1859.

Continued as

(33 *b.*) Photographic Journal (The). The special organ of the Liverpool and Manchester Photographic Societies and North London and Charlton Photographic Associations. Edited by George Shadbolt; assisted by a competent staff. One vol. (VI). 4to. 1859.

Continued as

(33 *c.*) British Journal of Photography: (The) The special organ of the

Liverpool and Manchester Photographic Societies and North London and Charlton Photographic Associations, 1860–88. +

From March 15, 1860, the special organ of the following photographic societies: North London, South London, Liverpool, Manchester, Birmingham, Charlton. Edited by George Shadbolt, assisted by a competent staff. By J. Traill Taylor 1865 to 1879, and 1887–8. By W. B. Bolton (during Mr. Taylor's absence in America), 1880–86. Twenty-eight vols. [(VII—XXXIV), 4to, weekly; price 3d. Published by H. Greenwood & Co., 2 York St., Covent Garden, London.

The "B. J. P." has always been in the van of photographic progress. Fortunate is the man who possesses a complete set (its value is from £20 to £30). The first ten volumes were published in Liverpool; all subsequent ones in London.

(34.) LONDON, EDINBURGH, AND DUBLIN PHILOSOPHICAL MAGAZINE AND JOURNAL OF SCIENCE (*See Philosophical Magazine*).

(35.) (MAGAZINE OF SCIENCE AND SCHOOL OF ARTS. Intended to illustrate the most useful, novel, and interesting parts of natural history and experimental philosophy, artistical processes, ornamental manufactures, and the arts of life.

From Vol. II, edited by G. Francis. Large 8vo. 1839–52. Fifteen vols. London.

(36.) MANUAL OF SCIENCE AND ARTS AND PHOTOGRAPHIC MISCELLANY (THE). Edited by J. J. and E. Harrison. Five numbers, published. 1854. 8vo. London.

(37.) MICROSCOPICAL SOCIETY, JOURNAL OF THE (ROYAL). Containing its transactions and proceedings, and a summary of current researches relating to zoölogy, botany, microscopy, etc. Edited by Frank Crisp, etc. 1878–88 +. Bi-monthly. 8vo. Price 5s. William & Norgate.

At the end of each number there is a valuable (illustrated) description of new pieces of apparatus. To those who practice photo-micrography, these volumes will be of great service.

(38.) NATURE. A weekly illustrated journal of science. Large 8vo. 37 volumes. 1869–88 +. Edited by Norman Lockyer. Price 6d. (the earlier numbers 4d.). McMillan & Co., 29 Bedford street, Covent Garden.

Nature is the leading organ of British science, and numbers among its contributors the principal scientists of the age.

(39.) NORTHERN MICROSCOPIST (THE). An illustrated journal of practical microscopy. Edited by George E. Davis. 8vo. 1881–82 ||. Monthly. Price 6d. London: D. Bogue, 3 St. Martin's Place, Trafalgar Square.

(40.) NOTES AND QUERIES. A medium of intercommunication for literary men, artists, antiquaries, genealogists, photographers, etc.

First series, 1849–55. Vols. I to XII. Small 4to. Weekly. Bell & Daldy, London. Price 4d.

Second series, 1856–61. Twelve volumes.

Third series, 1862–67. Twelve volumes.

Fourth series, 1868–73. Twelve volumes.
Fifth series, 1874–79. Twelve volumes.
Sixth series, 1880–85. Twelve volumes.
Seventh series, 1886.

Successively edited by W. J. Thom, H. F. Turle, and J. Knight.

Now published at 32 Took's Court, Cursitor street, Chancery Lane, E. C. Price 4d. Weekly.

During the first series (1849–55) *Notes and Queries* was quite a photographic organ, the contributors including Scott-Archer, Dr. Diamond, and many other photographers. But of late years this element has quite dropped out of this pleasant little periodical, which has become more and more restricted to antiquarian and "curious" studies.

(*To be continued.*)

A NEGLECTED METHOD OF SILVER PRINTING.

BY CHARLES L. MITCHELL, M.D.

[Read before the Photographic Society of Philadelphia.]

DURING the past five or six years, and with the advent into popular use of the dry plate process of photography, considerable attention has been given to different methods for producing by photographic processes various artistic effects in printing the picture, in simulation of those obtained by the mechanical processes of the engraver and etcher. The albumen silver print reflects the general popular taste, and when artistically made is always pleasing, but the gloss and brilliancy of its surface soon become monotonous and even wearying, and the eyes seek relief in the mellow tones and soft outlines of a well-executed etching or engraving. This has led to the introduction of the various forms of bromide paper, "Alpha" paper, platinum prints, etc., etc., all of which seek to reproduce on a dead or mat surface paper, by different chemical methods, the blacks, purples, grays, and various half tones, obtained by the skillful use of the engraver's tool, and to give effects corresponding to those found in a fine line engraving.

The use of these papers has led to considerable change in the styles of photographic printing, and although the albumen print will probably always be to a very large majority of persons "the photograph," and the only form recognized by that title, there will remain a considerable minority, to whom the other more novel and more artistic styles of photographic printing will prove most interesting and enjoyable. The use of bromide paper for preparing prints and particularly for enlargements, is rapidly increasing, and yet the writer feels compelled to acknowledge that after considerable experience in its use, he has frequently been disappointed in the results obtained from it. For enlargements, which can afterwards be worked up with the stump and crayon, it leaves nothing to be desired, but for contact prints and enlargements of moderate size, which are to receive no further finishing, it must be confessed that there is often in the finished bromide print a lack of the finer details of the picture, which is rather disappointing when compared with a good albumen print prepared from the same negative. Furthermore, the process is to a certain extent, one which must be carried on in the dark—in a double sense—for not until the paper is exposed, and the latent image has commenced to show itself under the influence of the developing solution, does the operator know whether his exposure has been properly timed so as to secure the best print, and it is then too late to more than partially remedy the difficulty by influencing or modifying the remainder of the already partially completed development. It is true a succession of trials will soon determine the proper exposure for any one negative, but this takes time and is expensive, so that among photographers, and particularly amateurs, to which class the writer now mainly addresses himself, the remark is often heard, "Yes, bromide prints are very beautiful when you can get them just right, but I find much difficulty in doing so, and but few negatives produce fine results. For general work I prefer a good albumen print."

The purpose of the writer this evening is to call attention to a style of silver printing, once quite popular but now fallen into comparative disuse, which is, while probably no better in its finished result than the bromide process at its best, yet considerably more certain in its result, at least, as easy in its execution, and affords a variety in effect much superior to that produced by the bromide process. I allude to the old method of printing on plain paper, sensitized with chloride of silver. Years ago, in the time of the old wet plate processes, this method of printing was quite popular, but of latter years it seems to have dropped almost completely out of sight, and there is but brief mention of it made in the different technical works on photographic printing. Yet it gives results which are so extremely beautiful, that it seems but proper that more attention should be directed to it, and particularly by those artistic photographers who are always seeking new and beautiful photographic effects. In portrait work it gives beautiful, soft outlines and warm tones, and for landscapes, architectural studies, genre pictures, copies of old engravings, etc., it gives results which for softness, delicacy and perfection of tint cannot be surpassed by any other method with which the writer is acquainted. With it a great variety of tones can be obtained, ranging from a sepia or a rich brown to a deep purple or even black, capable of reproducing in many instances the same soft and warm tints of an old mezzotint or copper plate engraving. Furthermore, as the process is conducted in the same manner as in ordinary albumen printing, the period of exposure is not an uncertain quantity, but the printing can be watched as it goes on under the printing frame, and the depth of the print and consequently the character of the subsequent tone, regulated according to the taste of the operator.

The details of the process are briefly as follows: the paper used should be an ordinary plain white paper—Rives, for instance—with a moderately smooth surface. This is to be salted in the usual manner with a soluble alkaline chloride (sodium or ammonium), a small quantity of gelatine or albumen being added to the bath, so as to give a slight size to the paper, and the paper subsequently well dried. Such paper can generally be procured from the dealers, already prepared. Other varieties of white paper with a rougher surface, corresponding in grain to the "C" Bromide paper, may be prepared in a similar manner, and the writer hopes to be able to make further experiments in this direction.

This prepared and salted paper is now to be sensitized. This is done by floating it on a sensitizing bath composed of fifty grains each of silver nitrate and ammonium nitrate to the fluid ounce of water. This bath should be kept slightly alkaline by the presence of a small quantity of silver carbonate (produced by adding a few drops of a solution of sodium carbonate to the bath), the clear supernatant liquid being always poured or filtered off from the precipitated silver carbonate before the bath is used. The paper should be allowed to float on this bath for from three to five minutes, three in summer, five in winter, and then hung up to drain and dry. All these operations must, of course, be performed in a darkened room, the same as in silvering albumen paper. When thoroughly dry, the sensitized paper must be fumed with ammonia for fifteen minutes, in the fuming box, and is then ready to print. This is done by exposing it, under the negative, to the sun, in the usual printing frame. The paper prints rapidly, and from time to time the frame must be removed to a dark place and the progress of the printing inspected. Here is one of the great advantages of this process over the Bromide process, for the operator can see just what he is doing, and can at any time stop the printing when the color of the print shows it to have gone far enough. The prints when removed from the printing frame, are to be soaked in a bath composed of acetic acid one ounce, water one pint, for about fifteen minutes, and then this poured off and the prints washed with half a dozen different changes of water, until nearly all the free silver has been removed. They are now ready for toning. The toning bath used is that formulated by Dr. E. L. Wilson, and is composed as follows:

Acetate sodium	60 grains.
Chloride sodium	60 "
Chloride gold	4 "
Nitrate uranium	4 "
Water	32 fluid ounces.

"neutralize the gold and uranium, previously dissolved in a little water, with sufficient bicarbonate soda. Before using, add gold to renew the bath, as necessary."

The prints are to be introduced into this bath, one or two at a time, and allowed to remain there until the proper tone is reached, the dish being kept gently in motion during the operation, so as to avoid uneven toning. This portion of the operation requires careful watching, as, owing to the porous and absorbent character of the paper the prints tone much more quickly than the glossy albumen prints. A few minutes is amply sufficient, and for the lighter tones of sepia and brown, it is enough to but dip them in the toning bath for only a few seconds. A little experience will soon indicate the proper length of time. After removal from this bath they are to be rinsed with several waters and then transferred to the fixing bath. This is best made as follows:

Hyposulphite sodium	2 ounces.
Salt	1 ounce.
Bicarbonate soda	¼ "
Water	1 pint.

Any of the ordinary hypo baths used for fixing prints will answer equally well, however. The prints are allowed to remain in this bath for about fifteen minutes, then removed, well washed in several changes of water, soaked for about ten or fifteen minutes in a bath of a strong solution of alum, to remove the last traces of hypo, and then thoroughly washed in running water for several hours. They are now finished, and can be dried by hanging them on a line or by pressing them between blotters; the latter is best. They can then be appropriately trimmed and mounted as desired. The writer has found it to be of an advantage to render them more pliable by dipping them in a 10 per cent. solution of glycerine in water just previous to drying them. They dry rather more slowly, but they mount much more evenly and smoothly. The prints which I now have the pleasure of showing you, will illustrate much better than I can describe the different tones which can be obtained by this process. They represent landscapes of various characters, and also some copies of engravings and I think will show fairly well the great range of tints and tone effects capable of being produced by this method of "mat printing," if I may so term it. These different effects can be produced by a little study of two particular parts of the process—the printing and the toning. Deep printing and quick toning will give sepias and browns; deep printing and long toning will give purples and blacks; light printing and short toning will give light sepia tints, and light printing and long toning will give cool grays and slate tints. Various intermediate effects between these can be produced with a little experimenting. The process is comparatively easy, sure of good results, and not expensive.

HYDROXYLAMINE AND ITS USE IN PHOTOGRAPHY AS A DEVELOPER.

BY JAMES H. STEBBINS, Jr., S. B., M. S.

[Read before the Society of Amateur Photographers of New York.]

HYDROXYLAMINE, as its name implies, has the formula $OHNH_2$, *i.e.*, it is a combination of an hydroxyl (OH) and an amido group (NH_2). It was discovered by Lossen in 1865, among the products of reduction of nitric acid, with tin and hydrochloric acid.

It is also formed when ethyl nitrate is reduced by tin and hydrochloric acid, or by the action of hydrochloric acid upon tin and ammonium nitrate. Lossen has also prepared it synthetically by passing a current of nitrogen dioxide over tin moistened with hydrochloric acid, which causes an evolution of hydrogen.

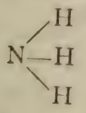
$$2NO+3H_2=3[NH_2(OH)]$$

In the first reactions the nitric acid is reduced by the hydrogen resulting from the action of a dilute acid upon tin, and which is then, as it may be called, in the nascent state.

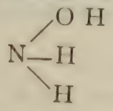
$$HNO_3+3H_2=2H_2O+NH_2OH$$

The hydroxylamine thus formed remains in the liquid combined with an excess of acid. It possesses the properties of an energetic base. It forms definite salts with acids, and can be regarded as ammonia in which the hydroxyl group OH has been substituted for one atom of hydrogen.

Ammonia.



Hydroxylamine.



Thus far it has not been isolated in the free state, but is obtained always combined with an acid.

When a solution of potassium hydrate is added to a concentrated solution of a salt of hydroxylamine, nitrogen is disengaged and ammonia is formed.

$$3(NH\ OH)=N_2+NH_3+3H_2O$$

Besides the properties just mentioned, this wonderful compound possesses many others.

Victor Meyer has studied the action of hydroxylamine upon organic compounds, and found that it combines with aldehydes and ketones to form well crystallized compounds.

One of the most remarkable qualities of this body is its great reducing power. As a reducing agent, it is eminently fitted for technical purposes. It reduces manganic to manganous oxide, and can therefore be used to obtain white patterns on fabrics dyed with manganese.

In photography it can be used to advantage, on account of the ease with which it reduces chloride or bromide of silver to metallic silver. Formerly the price of this article was so high that it debarred its use as a developer. It can now however be obtained at about $7 per pound, so that the cost of developing is only slightly higher than with pyro.

A short time since, my attention was called to an article by Professor Eder, appearing in *Dingler's Journal*, 1887, volume 265, page 225, in which he strongly recommends the use of hydroxylamine as a developer, for chloride and bromide of silver emulsions, and also gave a formula which he claimed would give excellent results. The formula reads as follows:

1. Hydroxylamine chloride, 1 part to be dissolved in 15 parts of alcohol.
2. Caustic soda, 1 part; water, 8 parts.

For use, mix 3 to 5 parts of No. 1 and 5 parts of No. 2 with 60 parts of water.

I made up a developer according to this formula, and, much to my disgust, found that it would not work. The trouble I experienced was blistering of the plates. In fact they blistered so badly that all those I experimented upon had to be thrown away. The moment I saw the blistering, I came to the conclusion that it must be due to the caustic soda. I therefore made up another much weaker developer, and tried that. It took much longer to blister the plates with this mixture, but it got there just the same. A third mixture was concocted, using carbonate of soda in lieu of the caustic soda. This mixture did not blister the plates, but it did not develop them either. Many other experiments were made, in which I used carbonate of potash, carbonate of soda, and carbonate of ammonia, ammonia hydrate, etc., but all to no purpose. I therefore had to give the thing up in disgust.

About a month ago my attention was called to an article in the *American Journal of Photography*, by John G. Cassebaum, on hydroxylamine, in which the author recommends pyro to be used in conjunction with the hydroxylamine. At first sight I did not think that it would work, but nevertheless I tried it, and much to my surprise found that it works beautifully.

The formula recommended by Cassebaum is as follows:

No. 1.

Hydroxylamine chloride	60	grains.
Pyro	1	ounce.
Water	6	ounces.

No. 2.

Carbonate of soda (crystals)	1½	ounces.
Sulphite of soda (crystals)	4½	"
Water	60	"

To develop take 2 drams of No. 1 and 8 ounces of No. 2, according to the nature of the negatives.

I have found the above formula to work well, but prefer the following one, as it is easier of application:

No. 1.

Hydroxylamine chloride	2	grams.
Pyro	15	"
Water	100	"

No. 2.

Carbonate of soda (crystals)	24	grams.
Sulphite of soda (crystals)	71	"
Water	1,000	"

For use take 2 to 4 c.c. of No. 1 and 65 c.c. of No. 2, according to the nature of the negative.

The advantages of this developer are the following: It has wonderful reducing powers, producing a fine steel gray effect or color, and may be used over again quite a number of times. I have developed as many as thirteen negatives with one mixture. In this particular it resembles hydroquinone. As far as speed is concerned, it lies between the usual pyro developer and hydroquinone, as it develops somewhat slower than pyro but considerably quicker than hydroquinone. It works equally as well upon negatives and transparencies, producing very soft images, perfectly clear in the shadows, with good contrast in the high lights.

Perhaps you will ask me why it is that this developer don't blister the plates? I think that I can answer this question very easily. Pyrogallic acid is a substance which, when in solution, absorbs oxygen from the air with the greatest greed; in fact, even in the dry state it does not keep for any length of time without change.

In order, therefore, to preserve it when in solution, it is necessary to add to it a reducing substance. This is what is done in our usual developers, and the substances usually used are sulphite of soda and sulphurous acid. It may incidentally be here remarked that the stronger said reducing substances are, the longer the pyro can be kept.

Now, in the case of the formula just given, the hydroxylamine takes the place of the sulphite of soda, and being such a powerful reducing agent, it not only preserves the pyro, but also makes its reducing powers manifest in two ways when developing: 1st, it keeps the developer perfectly clear, or only slightly yellow; and 2d, it reduces some of the chloride or bromide of silver to metallic silver.

The reason, therefore, that it does not blister the plates when developing is, in my opinion, because the greater portion of its available power is used in preserving the pyro, and that therefore it has not strength enough left to cause this trouble. It may be due, in great part, also to the fact that no caustic alkali is used. At all events it works well, and I strongly recommend those who have not tried it to make the experiment.

A NEW TRANSPARENT FILM.

BY F. C. BEACH.

[Read before the Society of Amateur Photographers of New York.]

WITHIN the last three years numerous efforts have been made to furnish to the photographic world several substitutes for glass as a support for the sensitive film, intended to be equally as good, extremely light and non-breakable.

We have seen paper made translucent with castor oil extensively used; but the mussy and troublesome manipulation overbalanced its other desirable qualities. Succeeding this has been introduced the double film, on a paper support, by means of which the negative film can be removed and transferred from the paper to glass or a gelatine skin, after development and fixing.

Thus, though the manipulation requires more practical experience than when ordinary paper is used, a flexible film, perfectly transparent, free from grain and equal to glass, is obtained.

It would seem that the additional operation of separating the sensitized film from the paper support, and attaching it to a transparent film or skin of tough gelatine, might be avoided by coating the gelatine skin itself with the sensitive emulsion. I presume, however, this has been thought of, but rejected on the ground that paper, as a support, is perhaps more pliable and more easily coated. At any rate, the transfer process seems to me too complicated for the average amateur to easily master, and one which it would not be advisable to employ, unless a long journey in a foreign country is to be undertaken, when it is necessary to carry and have on hand a large supply of material having the least possible weight. What is wanted is a support for the sensitive film, which shall be as light as paper, transparent as glass, resisting the action of water and other acids and alkalies like glass, and capable of retaining its original size and shape throughout the necessary manipulations.

Then, when the negative is developed and fixed, it is precisely as if on glass, transparent, quick printing and non-breakable; all after transferring operations being unnecessary.

A step in this direction was the Woodbury film, which I exhibited before this society a little over a year ago. The support employed was a special thin paper treated with a resinous substance to make it transparent, and coated on both sides with gelatine sensitive emulsion. The film was quite delicate when wet, and easily torn. When dry, it presented a peculiar crinkled or wrinkled appearance, which was not altogether satisfactory.

Last fall a new transparent film, based on the invention of Francis H. Froedman, a chemist of Dublin, Ireland, was introduced, and is now supplied by the Vergara Film Company, of London. This is the film which I wish to exhibit and explain to you to-night, samples of which were kindly sent to me by the company. The film is patented in England, but not in this country, so far as I have been able to learn, hence there is no reason why it cannot be successfully made here.

An extract from the patent says that the best gelatine, either the hard or soft kind is used, according to circumstances, which is soaked for a certain time in water to soften it; it is then heated on a water bath, having additional water added, until it is completely dissolved. Then a solution of bichromate of potash is added to the hot solution, and also certain proportions of alcohol and glycerine, to make the solution flow well and give the film pliability.

The formula which works well is as follows :

Take of best hard gelatine	3 parts.
6 per cent. solution bichromate of potash	4 "
Alcohol	4 "
Glycerine	¼ part.
Water	24 parts.

This is filtered through flannel and is then ready for use.

The film is prepared on a glass plate treated with talc. The plate is first coated with enamel collodion, washed and drained, then coated with the hot bichromated gelatine solution, on a leveled marble slab, and dried, free from dust, at a temperature of 65 to 70 degrees F. In place of collodion, the gelatine may be put directly on the glass provided a rubber edging solution is used.

The bichromated plate, when dry, is next exposed to sunlight or shade until it is made insoluble, as will be indicated in the change from a yellow to a brown color; it is then washed in water sufficiently to remove any soluble bichromate salts not affected by exposure to light, and is lastly immersed in a solution of sulphurous acid or its compounds, which bleaches the film and renders it more transparent. When sufficiently acted upon by the acid, the plate bearing the film is washed in several changes of water until no more acidity is perceptible.

When thoroughly dry, the film is next coated in the usual way with the sensitive gelatine emulsion, then dried and stripped from its glass support by cutting around the edges. The film may be made in long lengths suitable for the roll holder.

It is perfectly smooth and flat, and looks very much like a thin glass plate. It is not affected by hot or cold water, and is insoluble in dilute acids and alkalies. The patent is dated May 3, 1887.

From the foregoing description it will be seen that the film is virtually nothing more than an insoluble gelatine skin, rendered nearly colorless by sulphurous acid, coated with a sensitive emulsion.

From a few experiments I have made with the film I am convinced that it can be treated just as easy and certain as glass, and is much better than paper, because it is quite tough, like leather, and will not tear. I have discovered that very cold weather causes the film to curl some on the emulsion coated side, while in a temperature of 60 or 70 degrees F. it will flatten out nearly straight.

I use the film on an ordinary Eastman carrier, which clamps the edges down flat. It may be slid in an ordinary plate holder with a thin plate at the back. But the special carrier is the best.

The sensitiveness of the film is governed by the sensitiveness of the emulsion put on it. In making a test with Wernerke's sensitometer, using a strong potash developer, I find the highest number registered is 17, while a Cramer 40 plate registers 22. Both were developed at the same time in the same developer for five minutes. The highest numbers can be seen by holding the plate or film over a piece of white paper. Cramer's plate is, therefore, ahead on sensitiveness.

(*To be continued.*)

* * *

SOMETHING NEW

Say! Have you seen the new Transferrotype?

The new Trans'–what?

Transferrotype.

No. What is it?

Oh! It's a picture you make on paper and then afterwards transfer it to—

Oh, yes. Now I understand—to a ferrotype plate; but isn't that a roundabout way to make a tin type?

Pshaw! It hasn't anything to do with any tin type at all.

Well, where does the Ferrotype come in?

There isn't any ferrotype either; its transfer–O–type. See!

Aha! that's it; but what is the O doing there? Why wouldn't transfer type be more intelligible?

Of course it would, but it wouldn't sound quite so photographic. You see, there is the hieleotype and the phototype and the callo-type and the ambro-type.

To be sure, and the Albertotype and Megatotype and Woodburyotype and Talbototype and—

Oh, hold on! There isn't any O in those I know.

Isn't there? But don't they seem to sound photographic?

Yes, they do; and now I see that the o's in those I mentioned really belong where they come in, as a terminal in the abbreviation of the word. Stupid, isn't it? I never looked at it like that before. It seems a pity, doesn't it, to spoil a thing by giving it a name that sounds so misleading?

You don't know what the object may be. There may lurk some subtle diplomatic policy in that O—a kind of sly pandering to the taste of the Hibernian element in the business. I shouldn't be surprised to see the final syllables soon written in this way—O'Type. Just think of it!

Yes, I do. But how about the German element in the business? They are about ten to one of the others. Won't that kind of hurt their Teutonic feelings?

That is rather a serious consideration; but you can't please everybody, and it pays to catch even a small minority by some dodge if you can't corral the whole convention on facts.

That's so; but say, this thing is really new, isn't it? The name is certainly. It's awfully new. Shouldn't be surprised if it had been caught by putting salt on its tail so as to disguise its freshness. I don't mean the name but the process.

New, did you say? Look here! Have you ever asked that question of anybody else who gives you credit for being posted on photographic matters?

Why, no!

Very well, don't do it again, or you will lose your reputation for information. Just go home and take down your *British Journal*. Then read up on the Carbon transfer processes and you will soon find out that this new thing is old enough to know better than to trot itself out under such a nondescript name.

Thanks. Good-bye!

Ta, ta!

X.

AMERICAN LANTERN SLIDE INTERCHANGE.

Report of Conference to adopt Regulations for Organization.

The undersigned delegates in conference assembled at the rooms of the Photographic Society of Philadelphia, on Monday, February 20, 1888, have agreed to form an association of photographic societies for the purpose of making and exchanging lantern slides among its members and foreign photographic societies, and propose for adoption the following regulations:

Name.

The name of this association shall be The American Lantern Slide Interchange.

Object.

The object of the organization shall be to promote interest in photography through the medium of lantern slides, by arranging for regular interchanges of the work of the different clubs between each other, and exchanges jointly with the clubs of England.

Membership.

The members of this association shall consist of the following nine photographic associations, to wit: Photographic Society of Philadelphia; Philadelphia

Amateur Photographic Club; The Society of Amateur Photographers of New York; The Brooklyn Camera Club; The Boston Camera Club; The Pittsburgh Amateur Photographers' Society; The Cincinnati Camera Glub; The St. Louis Association of Amateur Photographers; and The Chicago Lantern Slide Club.

The membership may be increased at any time by a vote of the majority of the members of the Board of Directors. Any applicant for membership shall submit with its application a set of not less than fifty slides made by its own members. Any member of the Interchange desiring to withdraw from membership shall notify the manager on or before the 20th of February of each year.

Board of Directors.

Each constituent society shall, at its first regular meeting in March, 1888, and at its first regular meeting in January of each year thereafter, elect one of its members as a delegate. These delegates, when elected, shall constitute a Board of Directors.

On the 1st of April in the year 1888, and on the 1st of March in every year thereafter, the Board of Directors shall organize by electing, either at a meeting called for that purpose or by correspondence, as shall be deemed best, a manager and two assistants, who shall together constitute the Executive Committee of said Board of Directors.

The Executive Committee of the Board of Directors shall determine the number of slides to be contributed to the Interchange each year; they shall formulate a system of rules governing the progress of the slides accepted for the Interchange, and shall decide how the slides to be sent abroad are to be chosen; also, how the foreign slides received in exchange shall be divided.

The Committee shall issue a call on or before the 20th of May of each year for contributions of slides from each society, which slides must be shipped to the manager on or before the 15th of October following.

On or before November 10th of each year the Executive Committee shall start the slides on the circuit.

It shall be the duty of the Executive Committee to determine what portion of the slides contributed by each society shall be sent on the circuit. If more than fifty per cent. of those submitted by any one society be thought unworthy of exhibition, the whole number submitted shall be returned to the society sending them. If this occurs upon two successive years the membership of that society shall cease.

The Committee may designate some topic or text to be illustrated by the various members of the Interchange for that year, and may specify the number of slides, and the amount of text to be furnished for the purposes of such illustration. In the case of the clubs being called upon to illustrate some subject connected with descriptive text for reading, not more than seventy-five per cent. of the negative and slide work need necessarily be that of the members of the clubs respectively.

Sizes, Mats, and Labels.

Slides for submission to the Interchange shall not vary more than $\frac{1}{16}$ of an inch from the standard size of $3\frac{1}{4}$ inches in height by 4 inches in length, the picture being perpendicular to the 4-inch side of the plate.

The diagonal of the mat opening shall not exceed $4\frac{1}{8}$ inches, and the subject shall be centred on the plate.

Slides shall be marked as follows: The subject-name shall be placed on the right-hand end of the picture as you look at the positive in its proper position, and a thumb label containing the invoice number on the lower left-hand corner of the same.

Slides and Negatives.

The negatives from which slides are made must be the work of the member submitting the same, and when the slide is not also the member's work it must be so stated.

Dues.

Each society shall, on its adoption of these regulations, pay to the manager the sum of ten dollars. Whenever the funds in the hands of the manager shall be reduced to less than twenty-five dollars, each society shall be assessed the sum of ten dollars. Each society shall be reimbursed, from the funds in the hands of the manager, for its expenses incurred in the shipment of slides.

Amendments.

Suggestions for amendments to these regulations shall be made in writing before February 1st of each year and sent to the manager.

He shall submit them to the members of the newly elected Board of Directors for their individual consideration by the 15th of March following, and a vote be taken thereon by correspondence (if no meeting is held).

If a majority of the Board of Directors have not voted in favor by the 15th of April following, the amendment shall be declared lost.

This Constitution shall be considered adopted and in force when it has been ratified by not less than five of the societies herein mentioned.

Mr. George Bullock, of the Cincinnati Camera Club, is hereby designated to carry out, on behalf of the societies represented, the interchange of slides now in progress, and is also authorized to complete the organization of this Interchange.

Adopted at Philadelphia this twentieth day of February, A. D. 1888.

Philadelphia Photographic Society, *By W. A. Dripps.*

Philadelphia Amateur Photographic Club, *By F. A. Cunningham.*

The Society of Amateur Photographers of N. Y., *By Richard H. Lawrence.*

The Brooklyn Camera Club, *By Richard H. Lawrence.*

The Boston Camera Club, *By William Garrison Reed.*

The Pittsburgh Amateur Photographers' Society, *By George S. Orth.*

The Cincinnati Camera Club, *By T. H. Kelly.*

The St. Louis Association of Amateur Photographers, *By George Bullock, proxy.*

The Chicago Lantern Slide Club, *By George Bullock, proxy.*

OUR ILLUSTRATION.

The handsome frontispiece of this issue of the Bulletin has been specially prepared for us by Sarony, the well-known photographer of New York. It is needless to say that it is a gem of photographic art; there is nothing that leaves the studio of this painstaking artist that is unworthy of the renown he has attained. In the particular line of work of which we give an example, there is probably no other man in America that has done so much and achieved such undoubted success. There is probably no single actor or actress of prominence that has visited New York City that Sarony has not obtained a negative of, and such a negative as will at once be characteristic and artistic. We commend the example we give as our illustration to all our readers as a study in this particular phase of photographic art.

All communications for the columns of the Bulletin *should reach us by Monday preceding the day of issue, to insure their publication at that time.*

MINNEAPOLIS.

CONVENTION ARRANGEMENTS.

THE committee landed in Minneapolis, January 30th, at 8 A.M. By 10 o'clock they succeeded in capturing Mr. Rugg, who towed them to Mr. W. H. Jacoby's office, from whence the four proceeded to Mr. C. M. Palmer's office, the said gentleman being the manager of the Exposition Building, and with whom arrangements were made to visit it at 2.30 P.M., same day. The interim was consumed in visiting the various halls in the heart of the city, with an eye to business sessions. One hall suitable in every way was offered at five dollars for each day, and ten ($10) for night sessions. The offer was left in abeyance for the following reasons: unless the Art and Merchants' Departments should be closed each day till noon, the attendance on its meetings would be too meagre to justify such arrangements; and the committee did not care to take the responsibility of assuming the assent of all concerned to such arrangements.

At the appointed time the Exposition Building was reconnoitred and the second floor of it and the art gallery fixed upon as the best for our purposes, all of which were subsequently secured.

The delegates returned and parted with Mr. Palmer, with an agreement to meet the Directorate at 10.30 next day. The rest of the afternoon was consumed in visiting the armory, which is badly lighted, leaks, and too small for our purposes. The skating rink is twice as large, but other objections lie against it; besides the lumber and carpenter bills would eat like a cancer; so nothing was left us but the Exposition Building and awaiting the meeting of the Directorate.

The next morning was used in visiting the hotels to secure reduced rates. Rooms and meals can be had ranging from $1.25 to $3.50 per day. Hotel rates and locations will be subsequently published with railroad rates in the journals. It is assumed that every live photographer (that means all who attend our Conventions) takes at least one of our periodicals and that all necessary information will reach him without such an enormous use of circulars, envelopes and stamps, all of which will be avoided so far as consistent with good business management.

At 10.30 the Directorate having met, Mr. Carlisle stated what we wanted; whereupon a member made a motion to refer our application to the finance and building committees, with instructions to report that evening at 5.30, which was adopted. Another interim and we used it to secure a stenographer. She is a real blonde, with dark hazel eyes, a finely formed head, and a first-class stenographer and typewriter, and seems to have fully her share of the nervous energy so much talked about in Minneapolis. The lady is Miss E. U. Everts.

At the time set the committees met and unanimously consented to our use of the building, but objected to the use of the second floor for the Merchants' Department, fearing the owners of booths, counters, etc., would condemn them; in fact, felt they had no right to let the floor indicated without their consent. But we insisted no other floor would answer as a substitute. Finally the writer, having the fear of the merchant before his eyes, suggested the securing of the consent of the various owners of booths, pyramids, etc., to our own use of the same. This was settled upon. Mr. Palmer gave us a list of the firms and Mr. Jacoby offered to accompany and introduce us, and use his influence in our behalf.

So next morning, seated in Mr. Jacoby's two-seated sleigh, behind his pair of spanking grays, we began the grand rounds. We started with trepidation but it was dispelled by the first gentleman on whom we called. All seemed only too glad to be of service to the Association, and we had the pleasure of meeting a number of the staunchest business men of the city.

Consequently the contract was made, securing such parts of the second floor as needed, the Art Hall on the same level, and the dining-room for day sessions, in consideration of half the receipts of the day open to the public.

Our lumber and carpenter bills should be almost, if not absolutely, nothing —the same as to dealers—the counters and booths, pyramids and platforms being admirably fitted for their purposes.

In the afternoon, in company with Mr. Peck, the committee went to St. Paul, saw part of the Industrial Parade and, picking up the suave Swem, visited the Ice Palace, the photographers within the reach of limited time, and the zealous Zimmerman, the genial merchant.

The "boys" in both cities are enthusiastic over the Convention, and will pull together to make it a success and the occasion one of pleasure to the "other boys." Arrangements will be made by them to visit Minnehaha, and for an excursion to and on Lake Minnetonka, where George Ayers will show the "boys" how to fall overboard, sport like a dolphin, and flop back again without risk of drowning.

They say this mixture of nervous and muscular energy results from the air, which is saturated with champagne and ozone.

Thursday February, 2d, went to Exposition Building, took some measurements and observations, while Mr. Jacoby made a set of negatives of the various points and objects in the Merchants' Department. Have secured electrotype of building and data for use of the journals.

Minneapolis was wrapped in the chaste embrace of winter, the snow being thirty inches deep in the streets, and the frost, like eider down, clothed the naked branches of shrub and tree; but still evidences enough remained of the combination of boulevards and shores; islands, lakes and skies; of river, dale and cañon, to make one anticipate the glories awaiting us next summer.

Everybody wears furs. It has been predicted that in a generation or two more the Minnesotians will be born with the fur on. The buffalo and the coon, the beaver and the mink, the otter and the seal, even the jack-rabbit has delivered up his epidermis to the Minneapolitan, and in the streets the hues and tints of their furs shimmer, glint and flit in and out, like the colors in a kaleidoscope.

Carlisle left Indianapolis with a faint feeling that he would like to have a fur coat. At Minneapolis it grew into a passion. Every moment rendered useless by the delay of others, up to the last day, was absorbed to find that coat. It grew to be a serious business. Nevertheless the coat must be found, for no brooking a soul passionately intent on an object to be achieved. At last, bless the Creator of furs and other things to meet the absorbing desires, the coat was found that satisfied his æsthetic eye and fitted his broad back. The coat was donned, etc., and he strode forth like a Tartar or a Viking king. The armature of fur about his neck seemed to complete the circuit of positive and negative electricity in him, and that of the Minnesota atmosphere, and he cavorted up the street with the combined energy of an engine and snow-plow. It is said the modified form of electricity in the nervous fluid is the link which connects the psychical with the animal life. Now the electrical lights of the North rise to the zenith of Minneapolis, and then darkingly drop their mysterious fruitage to the earth beneath. It was noticed, too, that each individual hair of mustache turned up its microscopic bill like ducks in a shower, to catch this cosmic ozone. All of which makes it incumbent on the "boys" to go up this summer and store up in their weary bodies some of this surplus energy floating with such negligence and hilarity in the Minneapolis air.

Our work being done, and accompanied by Messrs. Brush, Peck, and the courtly Beal to the train, we departed at 7.30 P.M., Thursday, for Chicago, whence Carlisle turned his face eastward, and the writer home to paddle his canoe with a photographic business at one end and the secretary's office at the other.

INDIANAPOLIS, February 11, 1888.

W. H. POTTER.

THE GLASGOW INTERNATIONAL EXHIBITION.

HAVING been appointed a Corresponding Member on the Committee of the Photographic Section of the above Exhibition, which is to be open from May to October, 1888, I am desirous of obtaining as many examples of artistic photographs as possible, representative of the work of Americans, and appeal to amateur and professional photographers to send me as early as possible before March 20th, mounted and framed, or instead, unmounted prints of such subjects as will be interesting in a foreign country. Transparencies will also be received. Particulars as to the title, plate, lens, size of stop, developer employed or process used, and price asked for copies, in case they can be furnished, should accompany the prints. Expenses of postage or transportation will be borne by the Exhibition authorities. I will send blank forms to all applicants.

MARCH 1, 1888.

F. C. BEACH,
361 Broadway, N. Y.

BROOKLYN ACADEMY OF SCIENCE—PHOTOGRAPHIC SECTION.

To the Editor of Anthony's BULLETIN.

THE Photographic Section of the Brooklyn Academy of Science will organize Tuesday evening, March 13, 1888, at their rooms in Warner Institute, Willoughby avenue and Broadway. The Committee on Organization report that they are highly encouraged by the number of applications received, and hope that all who are interested in photography in this section of the city, and wish to take advantage of the privileges offered them, will be prompt in sending their names to the Secretary. It is the desire of the Committee to make the section a working section in every respect, and each member of it can secure a practical chemical knowledge of photography if he so desires.

The dues will be nominal. Initiation, $1; monthly dues, $1, in advance. All are invited to meeting of above date.

A. A. CARDWELL, *Secretary*,
15 Lawton street.

McMICHAEL'S LATEST PRIZE.

Mr. H. McMichael, the well-known photographer of Buffalo, N. Y., has added another laurel to his already full wreath of honors. We have just heard that he obtained an extra silver medal, as a first prize for pictures sent to the Exhibition of the Photographic Society of India, held at Calcutta last month, under the patronage of Lord Dufferin, the Viceroy. We must congratulate Mr. McMichael on his well-earned success and Mr. Stanley on the plates that took the negatives.

DALLMEYER'S PATENT PORTRAIT LENSES.

We receive so many queries, "What is the meaning of the notches and pin on the rear end of my 3 B (or 3 A) Dallmeyer?" that we publish this, hoping it will explain sufficiently. Mr. Dallmeyer says: "The construction of the lens is such, that with the posterior lens of the back combination screwed home, the index pointing zero, it produces the sharpest possible picture of objects situated in one plane. Then, by unscrewing the posterior cell a turn, or parts of a turn, the previous intensely sharp definition becomes modified, *i. e.*, the contrast of excessive sharpness in one plane, compared with great want of sharpness in other planes, is balanced, producing the impression of a general distribution, or depth of focus; and this in exact proportion to the amount of unscrewing. Nothing has been sacrificed in securing this new power, and it can be used or not at the will of the operator.

"Thus a small portrait, intended for subsequent enlargements, must be perfectly and uniformly sharp. In this case the lens should be used intact, when the definition surpasses that of the old form of portrait lens, and bears enlargement up to life size. If, however, it is required to produce a larger picture direct with the same lens, then the posterior lens may be unscrewed just so much as tends to a general harmony of definition. The amount of unscrewing being once recorded, serves for all future occasions.

"With respect to the most advantageous use of the lens, it may be stated that for standing figures, card or cabinet size—subject at a distance of 20 feet—the lens should be used intact; and then, as the picture is taken on the larger scale, or as the subject approaches the lens, the posterior cell should be unscrewed in the proportion of about a quarter of a revolution for every foot of approach of subject.

"Important Note.—Unscrew first and focus afterwards."

The foregoing has been put so clearly that there is nothing we can add, and to those who have never used the "Diffusion of Focus" on their lenses (A, B and D Series), they will do well to test them according to directions given. On account of their lower price, many purchase and use lenses of the aplanatic order, such as Dallmeyer's Rapid Rectilinear, etc., but a comparison between the results will show how vastly superior are the productions of the portrait lenses, and where the gallery admits, the D series is specially recommended. There is nothing that a Rapid Rectilinear will do in the gallery that cannot be done with the D lens, and effects can be produced with the D lens that cannot with the former.

The publishers of the Bulletin.

Appropriate for the Vestibule.—Deacon (To Country Minister)—I thought it best to order a sign to be hung in the vestibule of the church, Mr. Goodman.

Country Minister—A very good idea, deacon; a very good idea. I've often thought myself that "Welcome, Stranger" or something of that sort would be appropriate. What sign did you select?

Deacon—Well—er—I ordered, Keep your eye on your overcoat.—*New York Sun.*

ANTHONY'S
Photographic Bulletin.

EDITED BY
Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by **ARTHUR H. ELLIOTT, Ph.D., F.C.S.,**
and a corps of practical assistants.

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BOSTON CAMERA CLUB.

A REGULAR MEETING of the Club was held on February 6th, the *President*, GEORGE E. CABOT, in the chair.

Two active and one associate members were admitted.

The accommodations of the club having proved inadequate, it was voted to secure an additional room for a library and reading room. This has since been secured and will be ready for occupancy by the middle of March.

It was also voted to increase the limit of membership from 90 to 110, also to increase the admission fee from $2 to $5 when the latter limit shall have been reached.

On the 13th inst. a meeting was held for the purpose of exhibiting the slides from the Cincinnati Club.

They were very much admired and showed a marked improvement over the contribution of last year.

After the Cincinnati slides had been shown, the slides from the field-day negatives in comtition for the Ripley prize, offered by Mr. George H. Ripley, were shown.

Messrs. E. F. Wilder, J. G. Hubbard and H. J. Latimer were appointed judges of the competition, and awarded the prize to Mr. H. N. Sweet, who used the Ripley transparency plate.

On the 20th inst., in spite of a severe rain storm, a large company assembled at the rooms to listen to a "Practical Talk on Emulsion and Plate-making," by Mr. George W. Fowler.

The process selected for exemplification was the one known as the boiling process, as by this plates of any desired rapidity may be made.

The formula was as follows, viz.:

SOLUTION A.

Bromide of potassium....	84 grains.
Iodide of potassium	4 "
Muriatic acid...........	1 drop.
Gelatine	36 grains.
Water (distilled)	4 ounces.

SOLUTION B.

Nitrate silver	108 grains.
Water (distilled)	2 ounces.

SOLUTION C.

Gelatine (hard)	100 grains.

Water to cover used merely to soften the gelatine.

Mr. Fowler conducted all the operations of emulsion making, the mixing, boiling, washing, coating of plates and paper in full view, and the "talk" will doubtless prove of great benefit to those present.

E. F. WILDER,
Secretary.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

INFORMAL MEETING, FEBRUARY 15, 1888.

Vice-President J. B. GARDNER in the chair.

The Chairman called the meeting to order, and introduced Mr. G. D. Milburn, who occupied the entire evening in demonstrating the film negative and transferrotype processes.

The drift of Mr. Milburn's remarks was to show the advantages of these processes over others now in common use. Their extreme simplicity and reliability and the brief time required in learning the details essential to success. "To field photographers," Mr. Milburn said, "film photography with its latest improvements was a great saving of material, apparatus and labor. For example, a gross of glass plates 6½x8½ when packed would weigh at least 76 lbs. The same size and number of films, 3½ lbs. Hence a saving in weight of material 72½ lbs. The filling of one half a dozen holders for the above number of plates would require more than double the time required for changing the spools of paper required; and hence a great saving of time and labor. There was also time saved in the development of the films, as quite a large number could be handled at the same time; whereas glass negatives required to be developed singly. Thus the most tedious part of negative making was greatly abbreviated and the time thus gained was more than sufficient for stripping and transferring the films. It only remained, therefore, for the outdoor photographer to say whether he would undertake to learn the simple details of manipulation required to avail himself of the advantages of "film photography" and relieve himself of the most disagreeable features connected with the practice of the art, or whether he would continue to consume his strength and time in unremunerative labor.

Mr. Milburn, in his demonstrations, was clear and precise in explaining every detail essential to success; and not only showed by examples of his work, made in the presence of his auditors, the capabilities of the processes under consideration, but also proved his aptitude for the work in hand.

The strictest attention was observable on the part of the audience throughout the entire proceedings of the evening, and at the close, Mr. Milburn was heartily thanked for his clever and instructive demonstrations and talk.

PHOTOGRAPHIC SECTION OF THE ROCHESTER ACADEMY OF SCIENCE.

REGULAR MEETING, FEBRUARY 28, 1888.

To say that the members of the section who witnessed the demonstration of the toning of bromide prints with uranium nitrate by President Croughton were pleased with the result, would not convey an adequate idea of the amount of pleasure and surprise they experienced. Starting with the rich black of the bromide print, he produced any tone between that and a brick red, being just the reverse of the colors obtained in toning albumen paper. Some fine transferrotype prints were also toned with it.

The formula used was as follows:

No. 1.

Uranium nitrate	5 grains.
Water	1 ounce.

No. 2.

Red prus. potash	5 grains.
Water	1 ounce.

Use equal parts.

The old toning bath can be saved and used again if not exhausted.

The bleaching and redeveloping of bromide prints was the subject announced for the next meeting, March 13th.

Yours truly,
MILTON B. PUNNETT,
Secretary.

CHICAGO LANTERN SLIDE CLUB.

THE February meeting was held in the rooms of the Architectural Sketch Club at the Art Institute, February 21, 1888.

President NICOL in the chair. The minutes of the previous meeting were read and accepted. Mr. Charles H. Gould was unanimously elected Treasurer in place of Mr. W. B. Shufeldt, resigned. The club then listened to the communication from Director Bullock, of the International Lantern Slide Exchange. The committee reported that the matter of sending a delegate to the conference had been duly considered, but it was found impracticable to send one, but they had replied as follows: "Could not send delegate, but we are in full sympathy with, and will co-operate in, the work in which you are engaged."—Chicago Lantern Slide Club.

The report was accepted and given a place in the records of the club. Nine new applications for membership were read to be voted upon next meeting. Some discussion followed as to an increase in the initiation fee in view of the activity shown, and in anticipation of furnishing new quarters, but the matter was referred to the Council for report at next meeting.

Mr. R. P. HARLEY then entertained the club with a neat and very practical demonstration in mounting lantern slides. The lights were then turned out and the lantern took its part in the entertainment.

Mr. R. BURGER showed some beautiful comparisons of development with dry pyro and with hydroquinone, both of these, in his hands, had resulted in fine clear work, and in explanation of his dry pyro work, he stated that he always used fresh sulphite solution and found no trouble in obtaining clear, bright positives.

Mr. J. S. NORTON had a very fine collection of hydroquinone developed slides.

Mr. F. W. BICKNELL, some excellent work

with oxalate; and Mr. **Burnham** showed some of his pyro work in positives, hard to be excelled. Mr. Burnham is rather partial to pyro, and stated that his experience satisfied him that a developer good for negatives gave equally good positives. Mr. **Douglass** had some fine slides developed with hydroquinone; also some made with transferrotype paper. He stated that in using hydroquinone he adds to the positive work a few drops more of bromide solution, than in negative work.

After passing a vote of thanks to the gentlemen who had so pleasantly entertained them, also to their fellow member, Mr. **Charles D. Irwin**, for his highly interesting lecture on Japan, as he found it on his trip around the world, the club adjourned.

W. A. Morse,
Secretaay.

THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

Regular Meeting, January 10, 1888.

(*Continued.*)

Dr. **Piffard**—I second that motion, and I nominate Mr. Newton as chairman of the committee.

The *President*—Gentlemen, it is moved that we go into a committee of the whole, which you will understand will open the question up to a fair discussion. The object, I presume, is to give every man an opportunity to discuss the amendment and to be able to come to a more satisfactory or more rapid conclusion.

Motion carried.

Dr. **Piffard**—I nominate Mr. Newton chairman of the committee.

Which was seconded and carried.

Mr. Newton then took the chair.

Mr. **Newton**—This position is a little unexpected, gentlemen, and whatever duties will devolve upon me, I shall perform them to the best of my ability, and I hope it will meet your approval. Now, gentlemen, to business.

Dr. **Piffard**—I move the adoption of Article I, Section 1, which provides that the name of this organization shall be The New York Camera Club.

Mr. **Stebbins**—I second that motion.

The *Chairman*—A motion has been made and seconded that the name of this organization be changed, and hereafter it shall be known as The New York Camera Club. Are you ready for the question?

Mr. **Canfield**—Mr. Chairman: It seems to me that this is an entirely unnecessary change for the society to make. This society has had a career of several years—I do not know exactly how many, but it has won an honorable name and place among societies of this and other countries, and a change, without any disgrace having fallen on the society, it seems to me is, in a certain sense, going back on our record. It invalidates whatever has been done in the past to a certain extent. It makes all the diplomas and everything of that sort that has been issued, the acts of a defunct organization, and for my part I shall vote against the change of name.

The *Chairman*—Is there anything further? Are you ready for the question?

A *Member*—What is the object of the Doctor in proposing a new name, and what is the benefit to be derived from it?

Dr. **Piffard**—I will answer the question which the gentleman propounded. I have heard of only one or two gentlemen who prefer the old name, while almost everyone I have heard speak of it prefer the new one; and that is one object in changing the name. The change did not originate with me.

Mr. **Beach**—You proposed it as an amendment?

Dr. **Piffard**—Yes, sir. The present name is a long and objectionable one. It is certainly long, and it is objectionable to a great many. It is objectionable to me personally, and it is objectionable to many others. I do not see that any of our acts are invalidated by a change of name, and I do not see that any diplomas that have been granted by the society in the years gone by become worthless on that account. I believe it is the sentiment of a large majority—whether two-thirds we will presently see—that the name should be changed from the Society of Amateur Photographers, which is generally abbreviated in the communications sent here into "S O A P." A great many of the members seem to prefer the name of the New York Camera Club to the old name.

Mr. **Beach**—I hold that the name is a good name, and it is a scientific name; it is an expressive name, and it is far more distinctive of the character of the society than the New York Camera Club. And furthermore, there are a great many other camera clubs in the country, and what is the use of this society becoming a common club, or rather, assuming a name which is so common throughout the country? I maintain that we should hold on to our name.

Mr. **Frisbie**—But, Mr. Chairman, the name of Camera Club is held by a large number of clubs throughout the country. There are a great many clubs in England by that name and in the United States, and our association is about the only prominent association that does not have that name. Now, before long there will be a league formed of the various clubs, and it seems as though it were perfectly just and right that this society should not keep out in the cold, but that it should assume the same characteristic name as the principal societies throughout the world, and be one of the family. What is more, as Dr. Piffard stated a few moments ago, there is hardly a member that can give the right name of this society.

Mr. SIMPSON—*Mr. Chairman*: Mr. Frisbie made a point when he said the name was too long, and for that reason we ought to change it. Now, we have a number of very prominent concerns in this city with fully as long a name, who prosper better than we do. For instance, there is the Young Men's Christian Association; The Farmers' Loan and Trust Company; The Society for the Prvention of Cruelty to Animals; The German and American Real Estate Title and Guarantee Company; The Real Estate Exchange and Auctions Rooms, Limited; and they all live under their own roofs, and they seem to prosper, and it has never struck the minds of its members that the name should be shortened. Now, take some of the photographic societies for instance. The Montreal Amateur Photographic Society, and The Pacific Coast Photographic Association; those are as long as ours.

I have just one more word to say. Suppose, for instance, you had a daughter and she bore the name of Mary Ann, but your neighbors also had daughters and they called them Bridget. Should I say to my daughter, "Mary Ann, your name is too long. My neighbors call their girls Bridget, and I suppose I will have to call you Bridget, too." (Laughter.)

The *Chairman*—If we propose to make any progress here and get through with this business it will not be permissible for one person to speak on the same subject more than once. If we proceed this way we will never get through.

Mr. BUSSING—Instead of calling this society the New York Camera Club, suppose we call it the Camera Club of New York?

Mr. GRANGER—*Mr. Chairman:* I want to say that I am opposed to any change of name of this society. I have opposed it as an officer of the society, and I oppose it as a member of the society, and as a member of the committee of the whole. The name of the society is a good one. It is not too long, and it is one by which we have been known for years, under which we have grown to fame and worth, and it seems to me wrong for us to adopt another name. The objections which have been made to the name are trivial and unworthy the consideration of the body of representative men and women that compose the Society of Amateur Photographers of New York. It is a good name. It is good enough for me, and I verily believe it is good enough for all the older members of the society, and I think, if due consideration is given to it, that the members who are in favor of a change will conclude that they are wrong, and that the old name is one which should be retained. I shall vote against the adoption of a new name, and I hope that every one who has the welfare of this association at heart, will join with me in voting against any change of name of the society.

Dr. HAGER—*Mr. Chairman:* If we change the name of the society, another society will be at liberty to come in and take our old name, and in consequence of it all the fame that we have earned up to this present time will naturally fall to the new society.

Mr. SPAULDING—*Mr. President:* I am not familiar with the history of this movement at all. I come from afar off on Orange Mountain, above the smoke and stir of this dense spot of land called New York, and I was quite surprised a few days ago to get this copy of the Constitution. There are a great many things in it which met my hearty commendation, but I cannot approve of the change of name that has been suggested. I have not been able to attend many of the meetings it is true, but have not lost my interest in the society, as one of the charter members who met in a room on Broadway to organize it, which seems to me ten years ago. I have some pride in the matter, and I see that some of the old members feel in the same way I do about this matter. Now, I am perfectly willing to admit that the name which we now have is very long; on the other hand, to my taste I should prefer a little variety. Yesterday, in looking over the names of societies in the *Photographic Times*, I noticed that there were nine in a list of perhaps fifteen or sixteen that had this common designation "The Camera Club." Now, it seems to me that that name is rather stale and outworn. It seems to me we might find a designation which would be more individual, or, rather, that would have more individuality about it. It seems to me we cannot do any better than to retain the old name even if the old name is somewhat inconvenient. The words "Camera Club" are, to my ear, euphonious, and they sound well. I have no objections to the words themselves but it seems to me we have a history behind us which we cannot afford to lose or to diminish in any respect. I find no difficulty in keeping the title of our club, the Society of New York—(here the speaker paused—Laughter) the Society of Amateur Photographers of New York. In spite of the fact that we have such a long name, I think it is very seldom that we speak the full name of this or any other society. We are in the habit of speaking of societies by short cuts, and why not do it in this case?

Now, it seems to me foolish to set all our friends here and our friends abroad explaining for the next six months to each other that this new society with a new name is, after all, the same identical thing as the old society that we belong to. And again, Mr. Chairman, it has a reputation that we are proud of. It seems to me we can speak the name easily enough. It seems to me the name means a good deal to us now. We have a reputation which we are proud of, and we ought to do all we can to keep that name.

Mr. ATKINSON—As one of the old charter members, and being very much interested in the society, I say that I am decidedly in favor of the change of name. The old name is a long, rambling, bungling, hard-to-be-remembered name, and we have had two distinctive instances here this evening of gentlemen who have tried to call off the name and have made a signal failure of it. As to any prestige we have won, there is no fear of losing that. We can make a greater name for the Camera Club than the old name has ever had.

Mr. MALI—*Mr. Chairman:* I would like to ask a question in regard to the composition of the camera clubs of the country. I would like to know whether those camera clubs contain professional photographers or not, and if they do, and we should change our name to the Camera Club, would not that fact be a disagreeable one? Now, when we have a joint exhibition it seems to me that it would be perhaps deceiving the people if we had in our club professionals. Would we ourselves like to compete with professionals?

Dr. PIFFARD—I would like to remind the gentlemen that this society contains some professionals among its members.

Mr. MALI—Do they compete with us in the joint exhibitions we have?

Dr. PIFFARD—I think very likely they do. At the last joint meeting there were some professional pictures on exhibition.

The *Chairman*—Are you ready for the question?

Mr. DEXTER H. WALKER—I have waited to hear an expression of opinion from the other members, because I wanted to find what the sentiment was. Personally I have not been very enthusiastic over the change of name, but nevertheless, I think the change would be a good one. The Philadelphia society is the only one I know of that retains any title similar to our own—"The Photographic Society"—and in that society are a large number of professionals who are active members and possess all the rights of amateurs, and it is not distinctly an amateur association. This society contains a distinct class of members known as amateurs exclusively, and competition here has been confined, except in one or two instances, to that class. If it has not, it ought to be, or else we are not an amateur club; and for that reason I am in favor of changing the name, and I am quite as much attached to the society as any man. I was one of its originators and founders. We ought to be satisfied with any name. "A rose by any other name would smell as sweet." (Laughter.)

We are distinctly an amateur club. The whole tendency of the amateur photographic fraternity is towards that sort of title, and not towards this long-sounding name that we have heard the gentlemen try to call off here this evening. Then, where are we to look for the prestige we have to get? Abroad? For my part, I do not see any great value in cultivating foreign relations. I do not see where we, as an association, can get any glory there. It may be that some individuals may get some glory out of it, but I don't find that my glory has increased any by reason of my foreign correspondence. My experience has been that it entails a mighty lot of labor and no compensation. So, looking at it from that standpoint, I do not know what we want to preserve in that direction. Still I would be willing to keep the old name, "were t'other dear charmer away;" but here I find myself confronted with the alternative of choosing between a short, euphonious name and one that is so complicated that if a fellow were to get boozy he never could go home and tell his wife where he had been. He could not say that he had been to the Society of Amateur Photographers of the City of New York. (Laughter.) He would get it all mixed up. And on that ground we ought to save our members from being placed in that embarrassing position. However, that is frivolous, of course. I am heartily in favor of the change of name.

The *Chairman*—Please state the question.

Dr. PIFFARD—It is as follows: That the committee recommend to the association that this organization be called The Camera Club of New York.

A vote was taken and the motion was lost.

Dr. PIFFARD—I now move that the name of the society shall be "The New York Camera Club."

Motion put and carried.

Dr. Piffard then read a portion of his amendments to the Constitution, but was interrupted by Mr. Williams, as follows:

Mr. WILLIAMS—*Mr. Chairman*: It would be a great advantage to me and to the other members of the society if Dr. Piffard would give us an idea of the difference between the Constitution which he is reading and the Constitution of which we have printed copies. It is almost impossible to get an idea of the Constitution as a whole without such a sketch.

Dr. PIFFARD—*Mr. Chairman*: This Constitution differs from the old one first, in curtailing somewhat the powers of the Board as they existed in the old Constitution. The old Constitution, for instance, declares that the Board has the power of making By-Laws. There is nothing to that effect in this amendment. Therefore that portion is omitted. The old Constitution also gave the Board power to interpret the Constitution. That is omitted in the Constitution under consideration. The number of officers is reduced by one, and two secretaries to one. And the fulfillment of the duties of that secretary is brought into the By-Laws, and ample provision is made there for all work. The other changes in the law, the way and manner in which amendments to the Constitution can be made, I will show in an amendment when we come to it. The only other changes that are made in the laws are a little change in the phraseology. For instance, members neglecting or refusing to pay their dues or "fine," the Constitution originally read. Now we have no fines. It is rather derogatory to our dignity to have such a word in our Constitution, and I consequently changed that word to read "other obligations."

Mr. SPAULDING—Is there any way of admitting active members?

Dr. PIFFARD—No. The membership certificates are no longer issued under this Constitution. There is no way of admitting members, because they are admitted in this Constitution, as they were in the old, by the Board of Directors.

Mr. SPAULDING—I refer to that only.

Mr. SIMPSON—It seems to me you omitted to state that only active members can have a right to vote. In this Constitution here the honorary members and corresponding members all have the rights that we have.

Dr. PIFFARD—In the By-Laws the subscribing, honorary and corresponding members are permitted a voice and vote on scientific questions only. It says: "The class of members heretofore known as 'associate members' shall hereafter be active members." This is as it is in the Directors' Constitution; but, as a matter of fact, as to the matter of membership certificates, that I have not altered from the document which I undertook to amend.

(Dr. Piffard then continued to read his amendments down to the article providing for the election of officers at the annual election, when objection was made.)

Mr. CANFIELD—Is a little criticism now in order?

The *Chairman*—Yes, sir.

Dr. PIFFARD—If there is no objection, I move that everything I have read, up to Article IV, if the same meets the approval of this committee, be adopted.

Mr. STEBBINS—I second that motion.

The *Chairman*—Are you ready for the question? It involves the adoption of this Constitution up to where the Doctor left off reading.

Dr. PIFFARD—We adopt nothing, Mr. Chairman. We are only a committee of the whole. We simply recommend it to the assembly, and give our opinion. We do not adopt anything in this committee. I move that this committee recommend to the society the adoption of these sections that I have read.

The *Chairman*—Are you ready for the question?

(Cries of "Question," "Question.")

Motion carried.

Dr. Piffard then read the section providing for the election of officers at the annual election, and in regard thereto the following discussion was had:

Mr. CANFIELD—I would suggest a modification of that in this way: I think that the members should have a direct vote for the President, Vice-President, Treasurer and Secretary of the society. (Applause.) And I would suggest that a provision of that kind be incorporated in the amendments as read—some provision to the effect that the members of the society shall vote at the annual meeting for a President, Vice-President, Secretary, Treasurer, and seven other Directors, who shall constitute the Directors of the Club. Maybe my phraseology is not correct; but the point that I wish to make is, that we vote directly for the President and other officers.

Motion seconded.

(*To be continued.*)

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

Q.—E. L. W. writes: On page 58 of No. 2 of the BULLETIN, in the report of Philadelphia Photographic Society, there is reference to an article on "Silver Printing on Albumen Paper," by Dr. Ellerslie Wallace. Was it ever put into print? If not, can you put me in the way of getting it? Also? you made mention of a picture made by some photographer in Canada who, by means of mirror reflections, gave several views of the subject on one card. Can you direct me how to procure a specimen of his work?

A.—The article you refer to was published complete in the BULLETIN for 1887, pages 79 and 111, the numbers for February 12th and 26th. We cannot answer second question.

Q.—M. N. C. writes: Does sulphite of soda in solution or with sal soda lose strength or deteriorate in any way by age? If mixed will they? I have sometimes thought negatives inclined to flatness by its use. An answer through the BULLETIN will suffice if satisfactory to you. I mix my pyro dry at each development with above solutions.

A.—Sulphite of soda in both the dry state and in solution deteriorates in time, but somewhat slowly; a few months' time will probably do no harm; the solution deteriorates much more rapidly than the dry salt. The presence of sal soda in the solution will not have any important influence.

Q.—C. S. K. writes: I am looking for and hoping to see some simple way to burnish bromide prints without a machine. I have a large album, four prints to the page, and if I could have some way to produce a nice gloss on them, after being mounted in the album, I should be pleased.

A.—The best way is to squeegee the washed prints upon a sheet of plate glass that has been smeared with oil and then wiped off pretty thoroughly, allowing them to dry on the glass. When dry, on raising them by one corner, the whole print will leave the plate with a fine gloss. Mount them by only gumming the four corners.

Q.—W. B. C. writes: Will you be so kind as to help me out through the columns of your valuable BULLETIN? I am using albumen paper, and am troubled with softening of the albumen. Sometimes it comes off and other times it presents a spongy or mealy appearance. I fume about one-half hour strong ammonia. 2d. How can I prepare the surface of wood for wood-cuts to print on, same as printing on paper (silvered)?

A.—Your trouble is most probably due to the cold weather. Be sure that all your solutions are at sixty to seventy degrees F. and that your paper is left in a warm damp room at least twelve hours before you wish to sensitize it and print your pictures. Directions for making prints on wood are given in the BULLETIN for 1887, pages 76 and 107, the numbers for February 12th and 26th.

Q.—J. R. H. writes: Will you kindly give me through your valuable columns the process of printing upon wood?

A.—See BULLETIN for 1887, pages 76 and 107—February 12th and 26th.

Q.—Rex writes: Can you inform me what good, if any, results by adding chloride of silver, made with muriatic acid, to the silver solution that you float albumen paper on?

A.—The only object we can see in adding silver chloride to the silver bath is, to saturate it with this haloid. A few drops of salt solution (sodium chloride), added to the bath, would be just as good.

Q.—A. C. J. writes: Will you be so kind as to answer the following questions through the columns of the BULLETIN? I use N. P. A. albumen paper, and it tones so slow it takes me forty-five minutes to tone a sheet. Can you give formula to tone the N. P. A.? Perhaps the fault is in my toning bath. Does it hurt portrait lenses to be in the cold, say ten degrees below zero? Also, will the cold weather hurt dry plates? What makes my instantaneous negatives have a green fog? I use the soda and pyro developer. What developer is best for instantaneous exposures?

A.—Your trouble in toning is probably due to having your bath too cold or too alkaline or both. Remember the bath should be just warm to the finger, and slightly alkaline for quick toning. Cold will not hurt lenses; but a rapid change from one temperature to another will sometimes cause a cracking of the cement and separation of the combinations. Cold water alone will not hurt dry plates. Green fog may come from bad soda or pyro, or both. Develop instantaneous negatives in strong solutions, unless you have plenty of time to spare.

Q.—J. A. S. writes: I send you by to-day's mail two (2) leaf photographs which I would like to have you examine and state through the columns of the BULLETIN what is the cause of the albumen being rubbed off. We have had considerable trouble with prints in this way and would like to find out the cause. Please answer through the BULLETIN, and you will greatly oblige a reader.

A.—The appearance that you speak of is due to careless handling of the paper either before or after sensitizing; it is due to finger marks, which a little close observation will soon show you.

Views Caught with the Drop Shutter.

THE LITHOGRAPHERS' DIRECTORY, published by The Lithographer Publishing Company, at 12 Centre street, New York, is a very complete and comprehensive work. The Directory was prepared only after great labor, and contains a complete list of all firms connected in any manner with lithography, or the graphic arts, in the United States, Canada, Mexico, and Central and South America.

MR. GAYTON A. DOUGLASS, of Chicago, has devised a simple modification of the toy pistol to use with the magnesium flash powder. The results obtained with it are very good, and surprising for so simple a contrivance.

MESSRS. CHAIN AND HARDY, of Denver, Colorado, gave us a call the other day on their way to Europe for a year's vacation. We hope they will have a most pleasant time and a safe return.

MR. J. R. CLEMONS, of Philadelphia, sends us a couple of handsome prints, made on his new matt surface paper. This is prepared in a different way from his former paper, and keeps longer after sensitizing. The results obtained withh it are very beautiful and artistic.

WE copy the following from the *Philadelphia North American:* "The Philadelphia Card Manufacturing Company, Limited, on the 17th day of 2d month (February), 1888, by a vote of a majority in number and value of interest determined to dissolve. The undersigned were elected liquidating Trustees to wind up the concern and distribute the net assets thereof among the members and others interested.

"All persons having claims against said Association will present them, and those indebted will pay

GEORGE S. GARRETT,
EDWARD L. SOUTH,
GEORGE L. PENNOCK,
Landsdowne, Del. Co., Pa.
Or their Attorney,
A. LEWIS SMITH,
112 S. Fourth St. Phila."

THE BLAIR CAMERA Co., have engaged Mr. Henry G. Thompson late Vice-President, of N. C. Thayer & Co., to take charge of their Chicago branch.

MESSRS. WILSON, HOOD & Co., and J. P. Cheney have formed a corporation called the WILSON, HOOD, CHENEY COMPANY, limited, and will do business at 910 Arch street Philadelphia.

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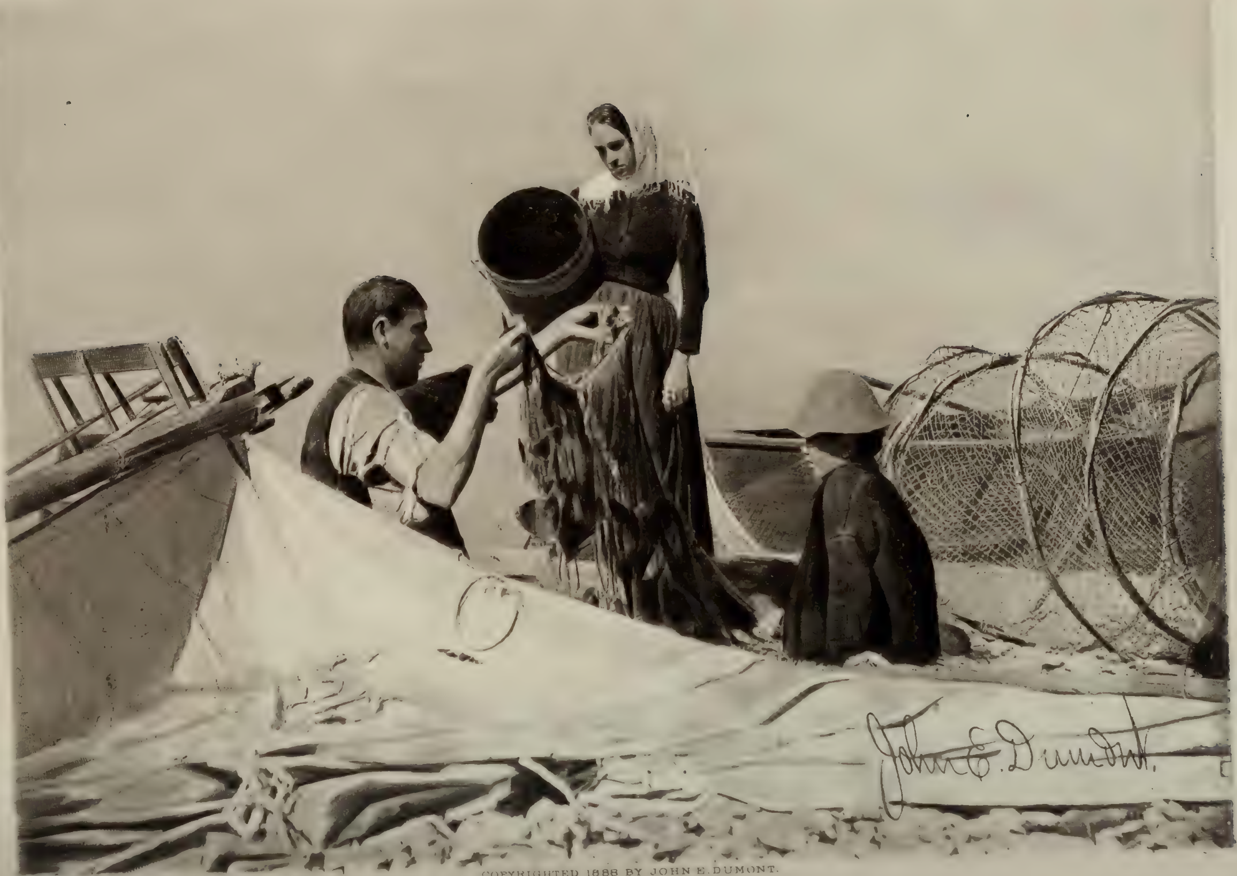

John E. Dumont.

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MENDING THE NETS.

PHOTOGRAVURE BY THE GEBBIE & HUSSON CO. LTD PHILADELPHIA

ANTHONY'S

Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

MARCH 24, 1888. Vol. XIX.—No. 6.

PHOTOGRAPHIC RESEARCH AT HARVARD OBSERVATORY.

We have recently received from Professor Edward C. Pickering, the Director of Harvard Observatory, a handsome set of lantern slides illustrating the work being done there under the Draper Memorial. These slides tell better than any words of ours of the thoroughly scientific character of these researches.

As our readers will probably remember, Mrs. Draper donated to Harvard Observatory the valuable photographic and astronomical instruments of her husband, the late Dr. Henry Draper, and also a fund to facilitate photographic research with them. These were fortunately placed in the hands of Professor Pickering, and have resulted in the production of some excellent photographic work.

The lantern slides before us consist of an excellent portrait of the late Dr. Henry Draper, a general view of the observatory and buildings containing the instruments seen from the northwest. One of these buildings contains the 11-inch Draper refracting telescope which has done so much good work in astronomical photography. Another contains the 28-inch reflecting telescope, and yet another the instruments employed in the furtherance of the objects of the Boyden Fund. A small building contains the 8-inch telescope with which much of the work of the Draper Memorial is carried on, and in the upper part of the western wing of the Observatory Building are the computing rooms where the calculations of the observations and researches of the Draper Memorial are made. All of this work being done from funds furnished by Mrs. Henry Draper, a magnificent and thoroughly useful method of perpetuating the memory of her illustrious husband, and entirely in the spirit that actuated him while he lived and worked in photography.

Two of the slides show the interiors of the buildings containing the 11-inch and 8-inch telescopes above mentioned, and are interesting in that they display the working parts.

Another slide gives a magnificent view of the nebula of Arion, photographed with the 8-inch refractor, and an excellent piece of photographic work.

On another slide we find the spectra of *α* Canis Majoris, *α* Canis Minoris, and *α* Aurigue, photographed with the 11-inch refractor, and enlarged. These are uncommonly fine spectrum photographs, even for ordinary terrestrial spectra;

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but when we think of the difficulties of making star spectra, they are very remarkable. Professor Pickering tells us that four prisms were placed before the object-glass in obtaining the negative.

The spectra of *P* Cygni, *B* Lyræ and *o* Ceti, showing bright lines, are on another slide. These were made with the 11-inch refractor and one prism before the object-glass, being afterwards enlarged. These are interesting in that they show the bright lines of the incandescent gases of these stars very clearly.

The 11-inch refractor with four prisms was also used in the production of the negative for another slide, containing the spectra *α* Lyræ, *α* Cygni, and *α* Bootes, which is also a remarkably clean piece of photographic work.

Yet another slide gives a view of that part of the heavens in the region of the Pleiades, photographed with the 8-inch refractor.

We are greatly indebted to Professor Pickering for these beautiful slides. They are an evidence of the thoroughly good work going on at the Harvard Observatory; are a monument to American astronomical photography, and a speaking tribute to the wisdom of the decision to found such a memorial to Henry Draper.

EDITORIAL NOTES.

At a recent "Lantern Evening" of the London (Eng.) Camera Club, two hundred slides from American societies were exhibited, and it is reported that "a most enjoyable evening was spent," and "interest was sustained throughout." Slides by Messrs. E. J. Carpenter, E. B. Johnston, Bullock, Hunter, Kelley, Petitdidier, Smith and Lawrence were said to be the most effective.

The conference of the above club must have been a thoroughly enjoyable affair. It was held in the rooms of the Society of Arts, John street, Adelphi, London, on March 13th and 14th. The programme contains the following list of papers to be read: "The Application of Photography to Medicine and Allied Sciences," by Dr. D. G. Thomson; "Application of Photography to Science," by H. Trueman Wood; "Single Lenses Corrected for Architecture," by J. Traill Taylor; "Modern Photographic Engraving and Printing," by G. S. Waterlow; "A Standard System of Weights and Measures," by G. Lindsay Johnson; "A Recent Improvement in Platinotype," by W. Willis; "The Present Value of Art in Photography," by J. F. Mostyn Clarke; "The Theoretical Aspect of Orthochromatic Photography," by Captain Abney; "The Metamorphoses of the Silver Image," by Lyonel Clark; "On a Further Development and Simplification of the Standard of Comparative Exposures Proposed by Dallmeyer," by T. Dallmeyer; "On a Ratio Slide," by Sir David Salomons; "A New Form of Sensitometer," by W. F. Donkin; "Centrifugal Separation in Emulsion-making," by Andrew Pringle; "Artificial Light in Photography," by Captain Abney. We hope to be able to give our readers a *résumé* of this conference from our special English correspondent, and also a number of the papers.

In a recent letter from our friend G. M. Elton, of Palmyra, N. Y., he tells us that he has "just got word that I have been awarded one of the medals at Calcutta, India, January 17, 1888." We are very glad to hear it and hope that his strength will always be sufficient for him to bear the burden of his ever-increasing load of honors.

We hear that the company which started in England some time ago to produce "photographs in natural colors," has not been a success and gone into liquidation. Thus ends another effort to fool the public by means of photography, and we hope that such will be the end of all like schemes.

Mr. Fred. E. Ives, of Philadelphia, gave a lecture at the Franklin Institute in that city on February 27th, on "Some Recent Advances in Photography," which was highly interesting. We hope to give our readers a report of it.

We regret to learn that our good friend W. H. Walmsley, the well-known microscopist and amateur photographer of Philadelphia, met with a serious accident in breaking his wrist by falling on an icy sidewalk recently. We are glad to learn that he is on the road to recovery and tender our sincere sympathy.

H. McMichael, the well-known Buffalo photographer, had a narrow escape from severe loss by fire quite recently. We are glad to hear that the loss was not a serious one, and that he was able to extinguish the flames before any great damage was done.

We would remind our readers that work on the pictures for the Minneapolis Convention is going on steadily and surely. There will be many efforts to wrest the Blair Cup from Mr. Landy's grasp, and we believe the effort will have to be a strong one. Nevertheless, he will have

> "The stern joy which warriors feel
> In foemen worthy of their steel."

The other prizes should also call forth a goodly display of work, and no time should be lost in getting the pictures started. Let us have a grand, good exhibit this year, and show our friends in the "City of Flour" what photography is and what they may expect her to be in the future.

The exhibition of the three societies of New York, Boston and Philadelphia, also takes place very soon in Boston. Our amateur friends should be up and at work on pictures for this exhibition. There is no time to be lost—the weeks soon fly past.

COLUMBIA COLLEGE EXHIBITION.

Second Notice.

William M. Whitfield had twenty-six pictures, mostly on 5 x 8 plates. The collection was generally very good, and a number of the pictures were quite striking. The "Lawn Tennis" was excellent, and caught at a good point. The pictures of mining scenes and views along the line of the new Croton Aqueduct were also very well done. We noted an extremely pretty water-fall, "Sages' Ravine, Conn.," which was a gem of its class. Two fine views of the new bridge over the Harlem River, showing method of construction, were also very interesting.

Fifteen 5 x 8 pictures, from the camera of Dr. Albert P. Hallock, were, as usual, very well done, and the subjects interesting. Several scenes of Peekskill

Creek and vicinity were well caught, particularly in the foliage. One of these, "Gallows Hill," the scene of the hanging of the English spy, was one of the most perfect pieces of foliage photography that we have seen for some time; the leaves seemed to have an individuality beyond description. Another fine picture in this collection was "Turtle Pond, Peekskill," in which an uncommonly pretty reflection made the view a very fascinating one. "A Schooner in the Highlands" was also a very artistic little view. While some views at Edgwater, New Jersey, showing limekilns and surroundings, were interesting in giving an idea of this industry.

J. L. Schroeder had about thirty pictures, mostly 5 x 8. An interesting picture in this collection was "The Elephants in Central Park, New York;" the surface of their peculiar skins being very well caught. Another good picture was "Fort Dumpling, Newport;" while yet another was "Bridge at Bedford, N. Y." But the best pictures in this collection were the portraits and groups, both of which were very good; the lighting, posing and general good management of the subject being highly commendable.

The exhibit of Richard J. Wainwright was excellent for the variety of subjects handled and the good photographic management in almost every case. The pictures shown ranged from vest camera views on board ship and elsewhere (of which there were fifty-two 1¾ inches in diameter to 4¼ x 6½), and the subjects embraced landscapes, yachts, steamers, street scenes, and views in Central Park, New York. One frame in this collection containing six 4¼ x 6½ views, was among the best in the exhibition. These consisted of two excellent portraits of children; a picture of a dog, capitally done; an ice-cart delivering ice in front of a New York residence; a barn scene, which was particularly pretty as a picture; and a view of a handsome horse and its groom. We hope to have the pleasure of reproducing one of these pictures as an illustration for the BULLETIN.

Mr. H. N. Tiemann showed only two pictures; but they were gems. These were two very fine platinotypes of woodland scenes, and remarkable for the softness with which the lights and shades were produced. Another good point with these pictures was their mounting; this was particularly artistic, the rough surface thick manilla paper used as a matt being very effective.

The Stoughton Brothers (C. W. & A. A.) were well represented with their well-known fine work. These were mostly 6½ x 8½ views, and the subjects were of unusual interest, especially to New Yorkers. There were four exceedingly fine interiors from the old "Jumel Mansion" at Washington Heights. Two more of the "Morris House" at Morrisania. An excellent copy of the portrait of Madame Jumel. In this collection we also noted a fine winter scene that was well caught and a view of a stone cottage with some uncommonly fine effects of shadow on the walls. This collection was in point of interest of subjects and also in the beauty of the photographic work, one of the best in the exhibition.

Twenty-five pictures from J. W. Cromwell contained many good evidences of careful photographic work, good focusing, clear and clean negative work, and also much artistic taste. The pictures were from 5 x 8 plates, and consisted of scenes with rocks and water that were very pretty and well done, some fine views of yachts, and some excellent bits of water-falls.

W. S. & A. W. Post had an exhibit consisting of about forty pictures from 6½ x 8½ plates. Among so many good things it is impossible to find space to do justice to all. "Scenes in St. Augustine, Florida," were very good. An excellent set of instantaneous views of hounds were "Summersett Kennel—Beagles," which were uncommonly well caught. A College Group—an enlargement from an instantaneous picture—was also good. Another enlargement was from a 2 x 2½ detective negative to an 8 x 10 bromide. The "Intercollegiate Mile Race" was also a good shot. A number of yacht pictures were very fine, especially one of the Mayflower; among the others we noted good views of the Puritan and Galatea. An interesting picture was a magnesium flash view of a christmas tree. Other instantaneous pictures of horses leaping a rail-fence with lady and gentlemen riders were also very good. And one of the best frames in the exhibition was in this collection; it consisted of four fine interiors and an excellent portrait. All these interiors were particularly well done, and the light well managed; while the portrait was artistic and well lighted.

Five frames containing sixty-three pictures were exhibited by C. Edward Grudewell. These were principally from 5 x 8 negatives. Among these was a group of colored waiters on hotel steps which was very well caught. A number of excellent pictures of Columbia College buildings and interiors of museums were also interesting. A picture of the driving gear and cranks of a locomotive was very finely done. A number of fine pictures of foliage were also seen in this collection. A group of college boys, containing about fifty figures, was uncommonly well done; there was not a poor face among them. Two interiors of a drug-store were very good, and made interesting pictures. We also noted an excellent view of the tower at the reservoirs in Central Park, New York.

Cheston Simmons had a large number of 5 x 8 pictures, forty-five in all, which showed a large amount of excellent photographic work. An incipient cane rush near the Columbia College chapel was very well caught. "The Amateur at Work" was also very good. A group on some steps was very well done, and the photographic work particularly clean. An excellent picture of a dog was also well worth notice. Another capital group was a party among some rocks with an amateur photographer among them; this was very well done. We also found some fine views of sailing and other vessels, and also yachts, in this collection. A picture of the propeller of a steamer with a figure standing beside it was interesting. Other interesting pictures were views in the chemical laboratories of the School of Mines. Scenes in Switzerland, Swiss châlets, a view of the Lion of Luzerne, and a coaching party in Paris were among some of the more interesting pictures in this admirable collection. A curious and very striking view was the "Falls of Schafhausen" at midnight, illuminated by calcium lights and fire-works.

A. C. Münoz exhibited some scenes in hunting camps in the Adirondacks that were very good; and also some views while canoeing along the creek at Lake Luzerne, N. Y.

We also found four bromide prints, but as there was no name attached to them we do not know who made the pictures; nevertheless, they were very well done.

We must now leave one of the best amateur exhibitions given by the Columbia College Society. The whole affair reflects great credit upon the members and shows an amount of good work that it is a surprise to us that they can find time to execute. If next year is an improvement on the collection shown this, then it will be one of the sights of New York in the spring of 1889.

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

The Optical Sensitizers—New Success with Azaline Plates—Forgeries Discovered by Photography—Action of Light in Winter and Summer—New Improvements in Enlarging Apparatus for Zircon Light.

In the almanac of the *Photographic Times* for 1888, which I received lately, I found, among some more or less good articles, on page 245 one from a certain Mr. Schiendl in Vienna. This gentleman denies the existence of the so-called optical sensitizers, upon which, as is well known, is based the modern color sensitive or orthochromatic photography. Having the honor to be the discoverer of the optical sensitizers, I may be permitted to say a few words about it.

Optical sensitizers are not a matter of theory, but this name signifies real facts. These facts, discovered first by me and confirmed by such world-renowned scientists as Eder, Becquerel, Hasselberg, von Betzold, Kundt, etc., are that certain dyes mixed with haloid salts of silver sensitize the latter for those rays which are optically absorbed by the dye in question. For instance, corallin absorbs green rays and readily makes bromide of silver sensitive for green. Aldehyde green absorbs red rays, makes bromide of silver sensitive for red; cyanin absorbs orange rays and makes bromide of silver sensitive for orange, etc. I could give a list of over fifty other dyes of this kind, well proven by the experiments of the investigators before mentioned. All the dyes of this character I call optical sensitizers, and since their behavior is confirmed by experiments, I think that I am justified to say that such optical sensitizers really exist. Nobody can deny it.

With the same authority that Mr. Schiendl denies the existence of such sensitizers, I might as well deny the existence of Mr. Schiendl, and perhaps for a better reason. If I should put the question to American photographers: "Do you know Mr. Schiendl?" most of them would certainly answer: "No. We have never heard of such a gentleman."

But Mr. Schiendl exists. I confess he is not an optical sensitizer; he has perhaps no photographic action at all, but I can testify that he exists, for he read a paper against optical sensitizers at the Vienna Photographic Society (*Photographisches Correspondenz*, January, 1887) which is full of scientific nonsense. This article was replied to by Dr. Eder in the April, 1887, number of the *Photographisches Correspondenz*, and all the senseless assertions contained therein were sharply refuted. The same was done by Mr. Victor Schumann. Mr. Schiendl, finding no more supporters of his photographic wisdom in Europe after this repartee, is now looking for adherents in America. I doubt very much whether he will succeed, and he will certainly sensitize nobody.

Speaking about the color sensitive process, I would like to draw attention to a new progress made in that direction. One of our first art critics, Mr. H. Pietsch, writes about it in the *Vossische Zeitung*.*

"By means of the new process they have succeeded in the photographic studio of Gustav Schauer, in copying one of the grandest works of German art, Adolph Menzel's 'King Frederic and His Suite at Hochkirch,' a painting not ventured at before by any photographer, and they have reproduced it in the most complete clearness, exactness and truth, even against the light effects of the original.

---

*The picture was taken on red sensitive Azalin plates.

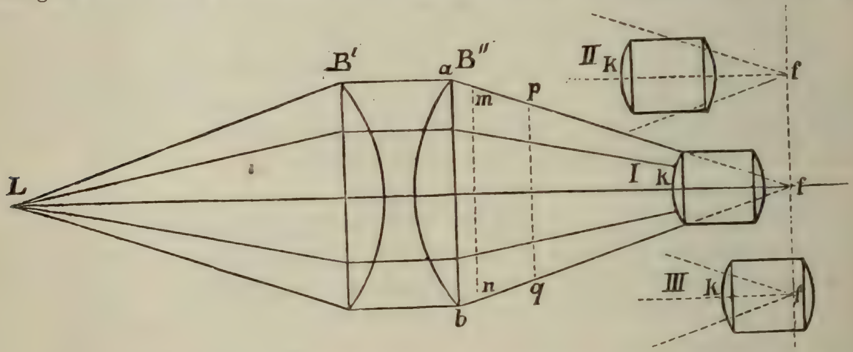
This result is so much more gratifying, as the original, being in the gallery of the royal castle, is hidden from the eyes of the general public. At the jubilee exhibition it had also obtained such a dark, unfavorable position, having so little, and that only reflected light, that the visitors could form hardly a clear and correct idea about the same. By Schauer's photographic copy, it will now be known in all its details for the first time.

From the deep shadows of night, in which the parts not touched by the fiery flame and fire glow are enveloped, seem to emanate a number of captivating and significant details, of which one had only an indefinite idea while the picture was hung up in the castle, or while at the jubilee exhibition. By this photographic copy we arrive for the first time at the full consciousness and comprehension of the riches confined in the work of this incomparable master. The burning village in the October night, the raging flames and each of their reflections upon the forms of the approaching and fighting grenadiers, upon the king and his suite, upon horses, houses and trees in all gradations of illumination, are rendered here most completely. In the many works of art representing glorious and important events and eminent personalities in the history of our country, the good intentions and patriotic dispositions have to cover many artistic deficiencies; but here in Mengel's 'Hochkirch' the patriotic tenor has found its personification in an artistic creation which can hardly be equaled, and belongs to the mightiest of this century. So much more welcome is this photographic reproduction, which thirty-two years after the completion of the original painting can now circulate among all classes of our population, and gives them an opportunity to adorn their homes with a faithful copy of the original."

Recently the authorities have been enabled to prove a case of forgery with the aid of photography. Dr. Jeserich, who was engaged by the State Attorney-General to examine the books of a merchant suspected of forgery, photographed the pages relating to the case. He took into consideration the well-known fact that colors will act differently upon ordinary dry plates in a photographic sense. While, for instance, blue appears almost white in the print, brown will have a black coloration. If two different inks had been used in the books, the one for the original entry and the other for the forgery that took place at some later time, these inks, a large interval being supposed to lay between their application, must give photographically different color tones. The result of the photographic copy of the pages in question was indeed surprising. The forged entries, made with ink containing blue, appeared very weakly upon the print, while the original black entries were quite dark. The exact chemical examination that took place afterwards confirmed in reality a forgery. A second similar case was that of a forged check. The month of May was changed into April. The value of these photographic confirmations is also to be principally looked for in the fact that an expert can give the objective proof for his opinion by presentation of the pictures, while the chemical examination gives always only a more or less subjective evidence. Photography, besides this, is always a conserver of the faithful picture of the forged object, which is very often destroyed by chemical analysis.

An amateur has expressed the opinion lately that the winter light in the open air was just as good as that of summer. He remarked: "Why is it that I obtained a picture in summer of an open-air group taken with Stirr's apparatus which is under-exposed, notwithstanding the sunlight; while now, in winter, with the same instrument, I have made a good, well-exposed instantaneous view?" The fact is correct, but the conclusion therefrom is wrong. The summer group represented several persons lying on the grass alongside of dark shrubs; the winter group represented a snowscape, with a group of skaters. In the latter the white snow has acted as an excellent reflector, illuminating the shadows of the persons, and causing a better photographic effect. In the summer group the dark bushes and the dark foreground formed badly reflecting surfaces, adding nothing to the illumination of the shadows, which therefore remained black. Of advantage to the winter picture also was the circumstance that the winter sun did not act so dazzlingly upon the light side as the summer sun.

I wrote to you already that enlargements on gelatine bromide paper have lately come here into general use, and mentioned also the zircon light, an improvement of the lime light. In the construction of enlarging apparatus the firm of Schmidt & Haensch, animated by Vogel, Jr., have made important improvements. The conditions of Mr. Vogel, Jr., for such an enlarging camera were the following: the system of illumination should be easily accessible on account of cleaning the lenses; the diameter of the lenses should be so large that plates to 13 x 18 c.m. can be covered to the edges; the negative holder should be so arranged as to bring any chosen part of the picture in the center, covering all other parts by suitable screens; and finally, the camera should admit enlargements from one to twenty times.



To accomplish these conditions all the usual constructions had to be disregarded. The enlarging cameras, as at present constructed, have stationary illuminating lenses and oftentimes none or no sufficient arrangement for removal of the illuminating point (lamp). But in the improved enlarging camera both lenses can be placed at more or less distance from each other, and the same can be said of the illuminating point in regard to its distance from the illuminating lenses.

The reasons for this arrangement will be clear afterwards.

The illuminating system consists of two plano-convex lenses of the same focus and size. The latter has to illuminate a negative of 13 x 18 c.m. over its complete surface, 230 mm. in diameter. If the illuminating point *L* is in the focus of the first lens *B′*, parallel rays of light will pass out of the same and fall upon the second lens *B″*, to escape again from here in a convergent luminous cone *a b f*, and to unite in a point *f*, which is exactly as far from the second lens as the luminous point *L* is from the first.

The negative to be illuminated, which is to be enlarged, should be of course within this radiating cone, and its size can be larger in proportion to its being more or less distant from lens *B*. (Compare the positions *p*, *q*, *o*, *m*, *n*, in the figure.) But we do not place it close to the lens, scratches and air bubbles being enlarged, which are detrimental to the picture.

Very important is the position of the enlarging objective *K* on the radiating cone. The assertion that the focus of the cone *f* had to be exactly in the center of the (symmetrical) objective *K* is thoroughly erroneous.

To find the correct position of the photographic objective for the escaping luminous cone, has cost Schmidt and Haensch many experiments. The result was that the objective *K* has to be in such a position that it covers completely the illuminating cones passing out of the lens B″, as in Fig. I. If the objective *K* is further off (as in Fig. III) the round picture upon the enlarging screen will show a heavy red seam. But if the objective is too near (Fig. II), a strong blue shadow will appear. To give now to the luminous cone the correct size for an even white illumination, one must be able to change the distance of the lenses *B′ B″* or the illuminous point *L*. If the apparatus is to produce pictures of one to twenty times enlargement, the distance of the photographic objective from the negative will have to differ very much, approximately from one to double its focal distance, and the illuminating cone with its illuminating point has therefore to permit of the same changes. All these possible changes of the illuminating system show also what focal distance the photographic objective is allowed to have to satisfy all requirements. For instance, if it was possible to extend the illuminating cone from 25 c.m. to 50 c.m., an objective of 25 c.m. focal distance would have to be applied. Such a one projects the smallest but sharp picture at about 50, the largest picture at about 25 c.m. distance (calculated from the diaphragm) to the negative. Deviations of several centimeters may be neglected.

For the correct focusing of the camera, one proceeds as follows:

At first—with complete neglect of the even light upon the whole surface—a sharp picture is produced for the chosen enlargement by removal of the objective from the inserted negative. Now remove the negative with the diaphragms and change on the one side the position of the luminous point (lamp) from the first illuminating lens, on the other side the latter from the second illuminating lens by moving back and forward, until a faultless white light surface has been obtained then; the negative with its diaphragm is inserted again and the picture is focussed once more, and the result is a faultless enlargement.

Both illuminating lenses in this camera have a focal distance of 300 mm.; the photographic objective is a Euryscope of Voigtlander, with a focal distance of 24 c.m. and an opening of about 4. 5 c.m.; an Antiplanat of Steinheil of 27. 5 c.m. focal distance and 4. 8 mm. opening, used in place of the Euryscope, gave the same good results.

◆

THE LITERATURE OF PHOTOGRAPHY.

BY W. JEROME HARRISON, F.G.S.

(*Continued.*)

(41.) Philosophical Magazine (The) Comprehending the various branches of science, the liberal and fine arts, agriculture, manufactures and commerce. By Alexander Tilloch. 42 vols. 8 vo. 1798--1813. London.

United in 1884 with the Journal of Natural Philosophy, by W. Nicholson, and continued as :

(41*a*.) PHILOSOPHICAL MAGAZINE AND JOURNAL (THE) By A. Tilloch (From 1824, by A. Tilloch and R. Taylor). 26 vols. (XLIII to XLVIII). 8 vo. 1814–26. London.

United in 1827 with the Annals of Philosophy or Magazine of Chemistry. By R. Phillips, and continued as:

(41*b*.) PHILOSOPHICAL MAGAZINE (THE), Or Annals of Chemistry, Mathematics, Astronomy, Natural History and General Science. By Richard Taylor and Richard Phillips. 11 vols. I to XI). 8 vo. 1827–32. London.

United in 1832 with the Edinburgh Journal of Science. By David Brewster, and continued as:

(41*c*.) LONDON AND EDINBURGH PHILOSOPHICAL MAGAZINE AND JOURNAL OF SCIENCE. Conducted by D. Brewster, R. Taylor and R. Phillips. 37 vols. (I to XXXVII). 8 vo. 1832–50. London.

Continued under the title:

(41*d*.) LONDON, EDINBURGH AND DUBLIN PHILOSOPHICAL MAGAZINE AND JOURNAL OF SCIENCE (THE). Being a continuation of Tilloch's Philosophical Magazine, Nicholson's Journal, and Thomson's Annals of Philosophy. Conducted by Sir. R. Kane, Sir. W. Thomson and W. Francis. Fourth Series, 1851–75. 50 vols. 8vo. Fifth Series, 8vo. 1876–88+.

Published by Taylor & Francis. Red Lion Court, Fleet street. Monthly. Price 2s. 6d.

The *Phil. Mag.*, as it is familiarly termed, is a library in itself, and the fortunate possessor of a complete set will be able to refer to many excellent papers on photography by the leading men of the day, either written specially for the magazine, or transferred from the memoirs of the various scientific societies. It was, for example, the medium by which Draper published, for England and the Continent, his papers written in America.

(42.) PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY OF LONDON. 1665–1888+; large 4to. Issued annually in two parts. Price from £1 to 3£ per part; but the papers included in each part are also sold separately, at from 1 to 5s. each or thereabouts. Vol. CLXXVI, for 1885, has 800 pp. and 75 plates.

Published by Harrison & Sons, St. Martin's Lane; also sold by Trubner & Co., Ludgate Hill, and J. Murray, Albermarle street.

The Royal Society (one of the oldest, and certainly the most important scientific society in the world) also publishes an annual volume of Proceedings, price 21s., which includes the president's address, the shorter papers, literary notices, etc. Vol. XXXIX, for 1885, contains 535 pp., 8vo.; it is sold by the same publishers as the Philosophical Transactions.

Important papers on photography, by Abney, Huggins, Hartley, etc., have appeared in the Transactions and Proceedings of the R. S. The headquarters of the Royal Society are at Burlington House, Piccadilly.

(43.) PHOTOGRAPHER (THE). An ever circulating Manuscript Photographic Journal. Editor, John Traill Taylor, Dumfries.

Conceived and put in operation by four amateur photographers of the North, this little journal was quite a success. Thomas Sutton, George Shadbolt, and other well-know men contributed to it. The name of the editor (who was then Hon. Secretary of the Dumfries and Galloway Photographic Societies) has since become one of the best known in the world of photography, as editor of the

British Journal of Photography. Specimens of the processes described were inclosed with the written descriptions. The circulating note-books and albums of the Postal Photographic Society of the present day are of a somewhat similar nature.

(44.) PHOTOGRAPHER (THE). A monthly journal of jottings. 8vo. 1880–84. Price 3d. George Mason & Co., 180 Sauchiehall street, Glasgow.

A pleasant little journal issued by a firm of world-wide reputation as dealers in photographic apparatus.

(45.) PHOTOGRAPHER (THE). Nos. 1 and 2 (all published), 12mo. 8 pp. each. Exeter: W. Roberts, Printer, Broadgate.

This is a "sell;" being in reality a tract or religious magazine. At least the only sentence I can find bearing on photography is, "The light which falls on you is unsteady"—a sentiment with which we quite agree. I pounced upon this publication with great delight in the British Museum Library, and fellow-photographers will imagine my disappointment.

(46.) PHOTOGRAPHER'S ANNUAL AND ILLUSTRATED ALMANACK, 1870. (See Illustrated Photo Almanac).

(47.) PHOTOGRAPHER'S POCKET ALMANAC AND REMINDER, 1871–85 ‖. Small 32mo. Cussons & Co., Southport and Liverpool. Price 2d.

A useful little publication by a well-known firm of dealers in photographic apparatus. The business was discontinued in 1886.

(48.) PHOTOGRAPHER'S WORLD (THE). Monthly. No. 1, 4to. 6 pp. Issued April 15, 1886. Published by Percy Lund & Co. The Country Press, Bradford (formerly of Ilkley).

The "P.W." is a pleasant magazine "for the profession only," to whom it is sent gratis and post free; about five thousand copies are dispatched through the post, monthly, to professionals at home and abroad. A charge of 2d each is made for back numbers. Each number now consists of 12 pp., and is illustrated.

(49.) PHOTOGRAPHIC ALBUM (THE), for the year 1855; being contributions from the members of the Photographic Club. 1855. Folio. London. Printed by Charles Whittingham.

This fine book contains forty-four photographs, some as large as 13 x 9 inches, with a description of each, and particulars as to process, light, exposure, lens, diaphragm, etc. It includes some of Fenton's Crimean photographs. Most of the pictures in the copy which I examined (British Museum Library) are still in a state of very fair preservation.

(50.) PHOTOGRAPHIC ALBUM OF LITERATURE AND ART (THE). No. 1, for May, 1858. 4to. 4 pp. London: Houlston & Wright. 1s.

This number (all that was published) contains a portrait (now faded) and memoir of the Princess Frederick William of Prussia.

(51.) PHOTOGRAPHIC ART JOURNAL (THE). From No. 1. February, 1858, to No. 8 for December, 1858. Published by W. Lay, 13 King William street, Strand. 2s. 6d per number. 4to.

The photographs (all faded) in the copy I examined were about 7 x 9 inches; the letter-press of the eight numbers included 110 pages.

(51 *a.*) The collected numbers were issued as the "Photographic Art Annual," by the same publishers, Xmas, 1858. Price 21s.

(52.) PHOTOGRAPHIC ART JOURNAL (THE). Illustrated with photographs printed in permanent pigments. Monthly. 4to. Four numbers only published. March to June, 1870; containing 64 pp. and 13 photos in Woodburytype, etc. S. Low, Son, & Marston, London. 2s. 6d. per number.

(52 *a.*) In June, 1870, this magazine was discontinued, and incorporated with "Art, Pictorial and Industrial," an illustrated magazine. Vols. 1–3. London, 1870–72. Folio.

New Series (edited by J. F. Robertson) Vols. 4–6. London, 1872–75. 4to.

(53.) PHOTOGRAPHIC ATHENEUM (THE). One sheet. 4to. January 8, 1859. London: J. Holmes, Took's Court.

The letter-press consists solely of a report of the sixth exhibition of the Photographic Society of London. The object of publication was to secure a copyright in the title.

(54.) PHOTOGRAPHIC ILLUSTRATIONS. By members of the Manchester Photographic Society. January, 1856. 4to. Published by G. Simms, 15 St. Ann's Square, Manchester.

The single number in paper covers which the British Museum Library possesses is apparently all that was published. It contains four photographs (all faded) with a description of each.

(55.) PHOTOGRAPHIC JOURNAL (THE). Edited by H. W. Diamond. Entered at Stationers' Hall. No. 1 for Tuesday, December 28, 1858, price 6d, 8 pages. Printed and published by Taylor & Francis, Red Lion Court, Fleet street.

This appears to have been issued in connection with some question as to copyright in the title "Photographic Journal." It was a sort of special number of the Journal of the Photographic Society.

(56.) PHOTOGRAPHIC MAGAZINE. Edited by P. H. Delamotte. 1857. Parts 1 to 3. 12s. each. Chapman & Hall, London.

(57.) PHOTOGRAPHIC MAGAZINE. 1863. Monthly. 1s. 5 Henrietta street, Covent Garden, London.

(58.) PHOTOGRAPHIC NEWS (THE). A weekly record of the progress of photography. Thirty-one vols. 4to. 1858–88.+ No. 1 published September 10, 1858. Price 3d. Vols. I and II bear the name of W. Crookes, the distinguished chemist, upon the title-page as editor, and the *News* was then published by Cassell, Petter & Galpin. Vol. IV was published by Thomas Piper (now Piper & Carter), a firm which has ever since continued to publish the paper, the office being now at 5 Furnival street, Holborn, London, E. C. The name of G. Wharton Simpson appears as editor on the title-page of Vol. V (for 1861), and he conducted the "P. N." until his death on January 14, 1880, when he was succeeded by Henry Baden Pritchard (died May 11, 1884), after whom came the present editor, Thomas Bolas.

The *News* was the first weekly photographic paper, and it has been distinguished throughout its career by its direction to the scientific and artistic side of photography. The early numbers contained 12 pp. each; the present issue has 16 pp., with frequent illustrations. The value of a perfect set is considerable—over £20—but the purchaser becomes possessed of a complete epitome of photography, past and present.

(59.) PHOTOGRAPHIC NEWS ALMANAC (THE). 1859–63. Small 8vo. Price 1s. The volume for 1860 contains pp. xii and 80. The numbers for 1859 and 1860 were published by Messrs. Cassell, Petter & Galpin, of Ludgate Hill; those for 1861–63 by Thomas Piper, of Paternoster Row.

Continued as:

(59 *a.*) YEAR-BOOK OF PHOTOGRAPHY (THE), and Photographic News Almanac. 1864–88+. Small 8vo. Price 1s.
Published by Piper & Carter, 5 Furnival street, Holborn, E. C. The editor of the "Year-Book" has usually been the same individual as the editor of the *Photographic News*. The name of G. Wharton Simpson appears on the title-page of the volume for 1863, and "his last work, completed on the very eve of his death," was the "Year-Book" for 1880. H. Baden Pritchard edited the volumes for 1881–84, and Thomas Bolas those since that date.

The "Year-Book" has always well merited the description of it given long ago as "the Whittaker of the photographer." For many years past it has contained admirable plates, and a large number of valuable papers from the best known English photographers, besides a mass of other valuable information.

(60.) PHOTOGRAPHIC ALMANAC AND READY RECKONER (THE). ("Lay's Photographic Almanac.") One number only was published for the year 1859. It is a small octavo volume of 90 pages (including 5 pages of advertisements). Price 1s. Published by W. Lay, 13 King William street, Strand.

In 1860 it was incorporated with the "Photographic News Almanac," and the odd volume of 1859 is sometimes used to make up a set of the News Almanac, which is, of course, altogether incorrect.

(61.) PHOTOGRAPHIC NOTES: "Journal of the Photographic Society of Scotland, and of the Manchester Photographic Society." Edited by Thomas Sutton; published by Bland & Long, 153 Fleet street, and C. Le Feuvre, Jersey.

Vol. I, for 1856, contains 17 numbers, royal 8vo. (monthly, January to August 4d., then fortnightly 3d. each); and pp. xx. and 280, 8vo., but this paging includes the advertisements. A second edition of the first two numbers (January 1 and 25, 1856) was published in which they were "remodeled."

(*To be continued.*)

A NEW TRANSPARENT FILM.

BY F. C. BEACH.

(*Continud.*)

THE development of an exposed film is very simple and is carried on precisely like a plate. The film should first be soaked in water not colder than 60 degrees F., for perhaps two minutes, until it lies flat. If the water is very cold the corners and edges will at first curl upward a little. Then the water is drained off and the developer applied. That recommended is the pyro and ammonia developer, but I find the potash developer based on my formula works excellently. On the sample films I have brought, I employed three grains of pyro to the ounce and six grains of potash. The development proceeds gradually, is under perfect control, and the film in the wet state can be easily removed and examined by transmitted light. The patented tray exhibited before the society a short time ago, in which the film could be clamped to form its bottom, would work excellently, since the tray acts as a frame to hold the film.

After development, which usually takes about as long as a plate, the film is removed from the tray by taking hold of one corner and sliding it out on a glass plate; it is then held under the tap and washed for a minute, removed from the plate and placed, picture side upwards, in the hypo bath, which should not be too cold—strength 1 to 4 ounces of water; it fixes out in a few minutes, is then washed for half an hour by soaking in three or four changes of water. Unless the film is completely fixed and well washed it will dry out with a slight yellow tinge. My first experiment in drying the film was to place it, while damp and limp, picture side upward, on a glass plate, then I set the latter in the drying rack. In the morning the film had fallen off and was somewhat buckled up.

But the rapidity of drying, as recommended by a special process, is one of the excellent points, which I shall demonstrate at the close of this paper.

Removing the limp and leather-like negative from the wash water, slightly draining off the surplus water, you simply put it in a tray and pour over it an ounce, or less, of common alcohol, and let it soak for fifteen minutes. Before the end of that time you will notice that the film becomes quite rigid. After soaking in alcohol I place the film between two sheets of clean blotting paper and bend them around a paper cylinder, such as is used for mailing purposes, not less than three inches in diameter, so that the coated side of the film will be outward, and clamp the paper to the cylinder by two or three elastic bands. If the film is removed from the alcohol before the time specified, it will stick in places to the blotting paper.

If kept in a draft of warm, dry air from five to fifteen minutes, the film will become perfectly hard and dry, retaining, of course, the curve of the cylinder; but when put in a printing frame, under pressure, it is made quite flat and as smooth and even as a glass plate.

The buckled film negative spoken of I treated in this way, wetting it first until it was limp, soaking in alcohol and then bending it around the cylinder; it dried perfectly flat and smooth. Fresh alcohol should be used for each separate film.

There appears to be no better way to dry the film smooth. I tried squeegeeing it, face downwards, on a sheet of vulcanized rubber, but when dry it shrunk and buckled up unevenly, as you will see by the specimen I have brought. If the film is suspended from two corners on a line to drain and dry it will take an hour or more, but it will curl inward around the edges. This may be overcome somewhat by soaking the film in water containing a small percentage of glycerine previous to drying. It is also a good plan when the film is surface dry to place it between sheets of blotting paper, putting the latter in a printing frame; the pressure of the spring will cause the film to dry flat. The film does not frill and there is no danger of the sensitive film slipping off as it sometimes does on glass plates.

It has been said that the film is adapted for photogravure purposes, because it can be printed from on either side. I estimate it to be about $\frac{1}{64}$ of an inch thick; and find when it is printed from on the wrong side there is a slight blur. Still there is no reason why the film may not be made sufficiently thin to be used either side. The picture on the film may be as readily intensified or reduced as on glass.

The manifest advantages of this film to the tourist are, that it supplies all the good qualities of glass and paper with none of their drawbacks; being as light as paper, large quantities can be easily carried in a small space.

I submit for your inspection five $2\frac{3}{4}$-inch square negatives, made by contact from transparencies, and a strip of a part of an original negative made on a film not backed with collodion, accompanying all with a silver print. These were sent to me by the company as specimens. I also have two or three 4 x 5 negatives made by myself, one exposed instantaneously with Hoover shutter, Ross lens, $7\frac{1}{2}$-inch focus, $\frac{f}{8}$ stop; another, time exposure, same lens, $\frac{f}{40}$, three seconds, very cloudy at time, and an over-exposed negative, having the peculiar buckling appearance obtained by drying on rubber. I also have a transparency made by contact, from one of these negatives, developed with oxalate of potash and iron; also a sample of the film, a portion of which was dipped in hot water to dissolve off the sensitive film. You will notice the remarkable transparency of the shadows in all.

Thanking you for your attention, I close with the hope that a film equally as good may yet be produced in this country by some of our energetic manufacturers.

[Two or three of the negatives and the transparency were placed in the lantern and projected upon the screen; they all appeared to be perfectly free from grain.]

[*From Photographisches Wochenblatt.*]

THE ILLUMINATION OF NEGATIVES FOR ENLARGEMENTS WITH THE CAMERA.

BY F. STOLZE.

(*Continued.*)

B. Negative Illumination with Solar or Daylight.

By application of these natural light-sources the necessity of a separate treatment is at once apparent, according as to whether direct solar rays, sunlight diffused by reflectors, or diffused daylight come into consideration. Strictly speaking, the last two will belong together, the daylight being nothing but solar light diffused by a reflector in a semi-transparent medium. Still, it will be good to sustain the separation in this discourse, the means to be applied corresponding. The determination of the time of exposure will be treated upon in common towards the end.

a. Negative Illumination with Direct Solar Light.

Everything that was said about the diffusion of direct light rays in part A finds application here: double ground glass is therefore the most suitable medium, if the greatest preservation of the light power comes into consideration. As long as it plays no part, porcelain glass is of course also admissible. I have found, however, double ground glass to be sufficient everywhere. The more vertically the solar rays fall upon the ground glass, of course the more powerfully they will act; still with the large dimensions of the enlarging apparatus it would be preferable to relinquish a variable position and decide upon a prolongation of the illumination.

b. Negative Illumination with Solar Light Diffused by Reflectors.

If a large white screen is exposed to direct solar light, and negative and enlarging apparatus are placed so that all straight lines, drawn from the optical center of the projecting objective towards the negative touch the screen in their prolongation, a magnificent negative illumination is thus obtained, which is proportionally intense, the more vertically the rays are directed towards the screen. It is therefore most advantageous, if the sun is behind the enlarging apparatus; the inclination of the screen being changed according to the height of the sun. In arrangements of this kind a changeable position of the enlarging apparatus is the easiest, it being only necessary to rest it upon a horizontal turning table. But the same can also be almost as well attained by enlarging the screen and a rotating adjustment. It is clear that this employment of the sunlight admits a far greater variation in the position of the sun than the one described under *a*, where the sun has to be in that part of the firmament which is situated behind the negative, while by application of a reflector screen of sufficient size the sun can be made use of at almost any time even with stationary enlarging apparatus. The necessary sizes of the screen increases, of course, in proportion to the more or less low position of the sun, so that hereby it has likewise to be confined to certain limits; still they are more extended than those in *a*, particularly as in this case even the method *a* can also be applied. This method can be well recommended for latitudes where calculations can be made for almost daily sunlight.

c. Negative Illumination by Diffused Daylight.

The negative illumination by diffused daylight may be quite similar to the one by sunlight, a direct one or one by means of reflectors. But these latter play a different part. While for sunlight they are designed to first effect the diffusion of light, their purpose in this case is only to reflect the already diffused light upon the negative. The conclusion is, that matt as well as shiny reflectors may find application and that the latter are preferred on account of their greater strength of light; care has only to be taken in their application to place them so that the part of the sky reflected in the same actually covers the negative completely, seen from the optical center of the projecting lens. I shall speak about this condition a little more in detail in my general remarks at the end of this article.

As a general thing the diffused daylight will be employed more directly than by reflectors, but the possibilities, existing herefor, have been disregarded too much in practical life. The opinion is always prevailing, that by an inclined position of the optical axis of the enlarging apparatus to a certain point one gains thus a sufficiently free horizon; but this necessitates a difficult construction; the direction of the sliding parts of the apparatus will be a bad one, and the manipulation of the whole apparatus inconvenient, while the space it occupies remains the same as in the horizontal position. Most of the photographic apartments being now situated in the upper parts of buildings, there is no reason why the optical axis should not be adjusted vertically, and the negative surface as well as the projection surface, horizontally. The advantages of such a construction are easily perceptible: the whole firmament is used as a light-source for the dense parts of the negative; for the transparent parts, that part of the sky having the strongest light; and finally, as soon as the sun appears, even his light can be made use of by covering the negative only with a ground glass.

Concerning the constructive part of the proposition, the advantage, first of all is clear, that for this arrangement only a proportionately small space is required, depending entirely upon the size of the pictures to be made. I would not advise separating it by an inclosure from the other room. Plain curtains are sufficient, letting no light pass through in exposures of even long duration. The frame for the sensitive paper must be made to move up and down between four vertical wooden rails by four bands running over rollers on the ceiling, remaining always parallel to the latter. The stretching of the paper is done in the most convenient way while the frame is lowered; it is either covered and protected against light, or placed directly in the correct position. The only difficulty remaining is, that the focusing has to take place from a ladder, and that negative, lens and cut-off of the apparatus can only be reached from this ladder, or, under certain circumstances, from the roof. In such cases, where the height of the room at disposal is not sufficient to give the distance from the negative to the projection surface, a small addition has to be built on the roof, receiving negative and objective, requiring therefore only very moderate dimensions. If this is, under certain circumstances, a disadvantage, it allows otherwise the great advantage of being independent of the size of the space at disposal. I believe therefore that one can become easily acquainted with this changed construction, and will acknowledge that the advantages are considerable. It admits of working with or without sunlight, and gives a maximum of light under all circumstances; it requires only a minimum of space; and finally, it saves the putting up of extra and heavy appliances.

(*To be continued.*)

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[*From Photographische Mittheilungen.*]

NEW OXY-HYDROGEN APPARATUS AND ZIRCON LIGHT FOR ENLARGEMENTS.

BY PROF. LINNEMANN.

The burners heretofore employed have many defects in that the consumption of the gas takes place inside of the socket, thus of course influencing considerably the effective use of the highest temperature on the outside of the burner. Linnemann has corrected this deficiency in the most successful manner.

Fig. 1 represents the newly constructed large burner with stand, one-fifth of its natural size; Fig. 2 represents the section of the burner, natural size. The gas streaming in at *a*, enters the hollow space of the socket, passes around the cylinder, whose position can be changed by the screw *c*, and passes out of the socket. At *b* oxygen enters under a pressure fifteen times higher than the hydrogen gas, through four holes, into the interior of the before-mentioned screw *c*, to escape again with great force out of the capillary perforation of this screw. It can easily be seen from the drawing that the screws *c* serve for the regulation of the hydrogen gas and the screws *d* for that of oxygen.

Fig. 3, *a*, *b* and *c* represent the flames in their different intensities. While *a* shows the flame, as in the present lamp, in which the oxygen commences to burn in the socket, *b* and *c* represent the form, which is obtained by the present Linnemann burner. The connecting points at *b* and *c* 3 3 form the hottest part of the flames, and produce, observed with the spectral apparatus, a brilliant carbon spectrum.

Fig. 3 *b* shows the correctly formed flame, burning without a noise; the space 1 is dark, like the corresponding part of the Bunsen flame, the seam 2 is of an almost invisible blue, the hottest part—4—a little more intense blue, and the part 5, the prolongation of the burning oxygen stream, distinctly colored of a whitish blue.

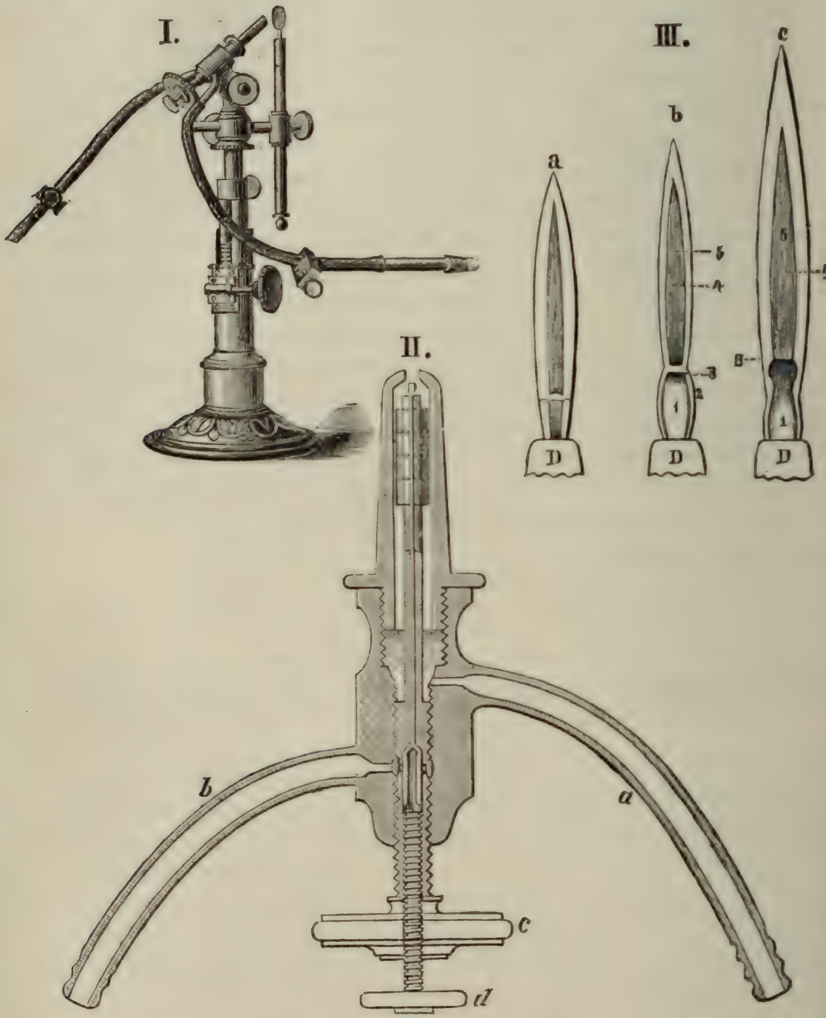

Fig. 3 *c* is a flame burning with noise by a larger consumption of gas, which is particularly suitable for the enamelling of large surfaces on account of its greater heat.

Linnemann's experiments, using his burner for lighting purposes, gave the result, that a good light was obtained at the first moment with a lime cylinder; but after a very short time cavities of the size of a pea would melt into the cylinder, thus reducing the value of illumination considerably. Magnesium plates would melt still quicker than lime, these being therefore also useless for a constant light. Linnemann directed his attention now to Zirconia, and although it took years of difficulties before the same could be solidified, he has succeeded lately in the production of completely durable Zirconia plates. Such a plate, mounted in platinum, and brought in contact with the hottest part of the flame, gives a magnificent white light, whose spectrum reaches from *A* to *H*, and which is not interrupted by any lines, but has a complete continuation, and offers the best substitute for sunlight. Although it is not settled yet, that the Zircon plates are completely indestructible, as they are apt to peal off on the surface when subjected to quick heating, yet they can be used many hundred times before the surface becomes so uneven that a remounting of the plate would be necessary, smaller defects of course being of no consideration; and by Linnemann's burner with Zircon plates a light has been produced, which for enlargements and objective representations will be preferred greatly to the electric light, as, once focussed to the optical axis of an apparatus, the lighting points remain completely unchanged.

The consumption of oxygen and illuminating gas is, according to Linnemann, for

60 candle power light 24 liters gas and 15 liters oxygen per hour.
120 " " " 37 " " " 26 " " "
200 " " " 48 " " " 44 " " "

The production of the oxygen takes place in a manner simple and without danger, by heating of two parts chlorate potassium and one part manganese dioxide in a copper retort over a Bunsen burner.

One hundred liters of oxygen can easily be evolved in 10 minutes, which will be sufficient for two hours' use.

Linnemann's burner is made in two sizes, but the light effect remains the same.

Corresponding lanterns, with illuminating lenses, achromatic objectives, etc., have been constructed to use for projection purposes, etc.—*Translated by H. D.*

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MUTUAL BENEFIT FEATURE FOR PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

Report of Committee.

In order that all concerned may have an opportunity to decide deliberately and intelligently upon the best provisions for a Mutual Benefit Department, under the auspices of the Photographers' Association of America, the committee submit in advance the following amendments and additional sections to the Constitution :

Article I.—*Section 5.*

The Association, under its charter, shall embrace a Benefit Department, under which a fund shall be maintained and designated "The Photographer's Legacy," conditioned as follows :

Article I.—*Section 6.*

Upon satisfactory proof of the death of any member who has contributed to the beneficial feature of this Association, the Treasurer shall, upon the order of the President and Secretary, at once pay to the person named in his or her legacy certificate, or legal heirs, as many dollars as there are members in good standing in the Benefit Department at the time of said death ; Provided, however, that one thousand ($1,000) dollars shall be the maximum amount paid on any one death.

Sec. 7.—All persons who are in full membership at the date of the passage of this section of the Constitution shall, on the payment in advance of one assessment of one dollar, be entitled to a legacy certificate.

Sec. 8.—Provided further, persons who may hereafter desire to participate in the Benefit Department, shall furnish the Treasurer, at their own expense, a certificate signed by a regular practicing physician, which shall set forth that the member at the time of application is in good health and free from any organic disease which would endanger life, and is under fifty-five years of age.

Article II.—*Section 2.*

And may participate in the Benefit Department on the payment of one dollar as one assessment in advance.

Sec. 3.—Except in case of participation in the Benefit Department, when a further sum of one dollar must be paid, as one assessment in advance.

Sec. 7.—No person shall be eligible to membership in the Benefit Department until he or she shall have first become financially a contributing member of the Association, and a failure to pay any assessment or assessments when due, shall forfeit membership in both departments of the Association.

Article III.—*Section 4.*

The Secretary shall not be entitled to any compensation accruing from assessments under the Benefit Department, but the executive officers may, if deemed just and proper, compensate the Secretary for any additional labor incurred on account or by reason of the Benefit Department.

Section 4 in the Constitution as it now stands, changed to Section 5.

Sec. 6.—The Treasurer shall keep a distinct and separate account of the Benefit Department, and shall, upon receiving proofs of a death, notify each and every member of the same, setting forth in said notice the former residence or place of business of said deceased, together with the date of death and cause thereof, as reported in the death certificate, which certificate shall be signed by the attending physician, or the undertaker who shall have had charge of the furneral of said deceased, and also by the legatee or heir making claim to the amount due on said decedent's certificate.

Sec. 7.—Assessments for each and every death occurring under the Benefit Department shall not exceed the sum of one dollar to each member in good standing in said department; and thirty (30) days' time from date of notice shall be allowed in which to pay such assessment; and any failure on the part of any member to pay the same within that time, shall forfeit all claims, benefits and membership in, under or against the Association, by the delinquent or heirs.

Sec. 8.—The notice of a death and of an Assessment hereinbefore provided (Article III, Sections 6 and 7), dropped by the Treasurer of the Association or his legal representative in any post office in the United States, shall be deemed a legal notice.

G. M. Carlisle,
C. W. Motes,
W. H. Potter, } *Committee.*

W. H. Potter, *Secretary.*

Indianapolis, February 14, 1888.

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A Serious Defect.—Artist (to agriculturist)—Possibly your knowledge of art is a trifle limited?

Agriculturist—Mebbe; but I know suthin 'bout cows.

Artist—Isn't the cow well drawn?

Agriculturist—Drawed good 'nough, but, b'gosh, she ain't chewin' her cud. —*N. Y. Sun.*

LANTERN EXHIBITION—SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

On Wednesday evening, February 29th, the regular monthly lantern exhibition was given, comprising about forty of the one hundred slides contributed by the St. Louis Association of Amateur Photographers, in addition to several slides by Mr. John E. Dumont and a few other members of the society. President Walker read the titles, while the lantern, which was a new one of superior construction, owned by Mr. Thomas T. Eckert, Jr., which was loaned by him for the evening, and was successfully operated by himself, Mr. Lawrence and Mr. Frisbie.

The pictures of the St. Louis Association attracting the most attention were those of subjects foreign to St. Louis.

Several views of the public buildings and Mississippi steamboats were shown. As a general rule the pictures lacked artistic and attractive qualities, aside from not possessing the clearness, crispness and snap which is such a desirable point in successful lantern slides.

It is to be hoped in another season the St. Louis Association will take more care in selecting interesting subjects, and also show slides of better technical quality.

A few slides by Mr. Franklin Harper were much admired, and about thirty slides by Mr. Cobb, made mostly from other members' negatives, were quite brilliant and were very much liked; Mr. Cobb, it should be mentioned, has acquired considerable skill by long practice, in making lantern slides by contact, using an artificial light, and employing as a developer, the Beach sulphurous acid pyro, in combination with an alkali solution composed of potash and soda.

His slides had a very agreeable brown tone, were extremly clear in the high lights, proving that with care and skill, pyro, as a lantern slide developer, is a success, and much more rapid than hydroquinone.

Mr. Dumont's work was greatly admired, being superior in technical excellence and artistic merit. Those of his slides which were especially liked were entitled, "On the Lower Genesee," showing a bold foreground against a fine distance; "In Judson's Glen," "Old Stone Bridge, at Leeds, N. Y." A comical picture of eight lawn tennis players with their backs towards the camera, entitled, "We Us & Co.," "Red Creek Bridge," "A Laker," mammoth freight propeller, with fine smoke effect. "The Basket Seller," "The Old Mill," "A portrait of a lady," made on a wet plate. "Listening to the Birds," a group of children under a tree, and "With favoring winds o'er sunlit seas," a schooner under sail; "Milking Time," representing a milk-maid about to step over the fence, with the cows standing in the foreground under a tree. The picture was very suggestive and effective and reflects much credit on Mr. Dumont's skill. "An Old Mill Wheel," surrounded by dense foliage alongside a small brook. The detail was exquisitely rendered and the lighting very soft. The slide had been toned and was of a peculiar, charming warm brown color.

Altogether, the exhibition was very interesting and instructive, and brought out the fact that lantern slide making, especially among some of the members of the society, is becoming attractive. The steady improvement in this line augurs well for future work. Shortly before 10 o'clock the exhibition terminated.

F. C. B.

THE VERGARA FILM—A MISTAKE CORRECTED.

In the last issue of the Bulletin, on page 144, Mr. Beach says, in his paper read before the Society of Amateur Photographers of New York, that the Vergara film is patented in England, but not in this country. This is a mistake; the film is patented here, and our publishers inform us that they are the sole agents for the United States. Probably Mr. Beach overlooked the patent.

All communications for the columns of the Bulletin *should reach us on Monday preceding the day of issue, to insure their publication at that time.*

A CORRECTION.

In W. Jerome Harrison's papers on "The Literature of Photography," *The Charter-house Photographic Art Journal* is mentioned as being "the organ of the Photographic Artists Stores of 43 Charter-house Square, London, E. C." Messrs. W. B. Whittingham & Co., 91 Grace Church street, the publishers of this journal, write us and state that the above statement is a mistake, and that Mr. Harrison has without doubt been wrongly informed. They further write: We beg to say that the above Journal is our property, printed and published by ourselves, and since the commencement of the present year has been published monthly instead of quarterly, and under the title, *The Photographic Art Journal.*

OUR ILLUSTRATION.

The charming study with which we illustrate this issue of the Bulletin was made by Mr. John E. Dumont, of Rochester, who never fails to secure artistic pictures. When we saw the negative, made on a Stanley plate, we at once wrote him to secure its use for a frontispiece of the Bulletin, and engaged the Gebbie & Husson Photogravure Company, of Philadelphia, to make one of their handsome plates, and thus enable us to give an artistic finish to a gem of photographic art work. The results speak for themselves. We seldom secure such a fine combination of artistic feeling, excellent photography and fine photogravure.

In a communication to us, Mr. Dumont gives the following description of the region where he obtained the picture:

"Last June, with an artist friend, I started out on a photographic expedition among the inhabitants of French Canada. Taking a steamer from Charlotte (the port of Rochester) and changing to another steamer at Clayton, and again at Montreal and Quebec, we reached our destination late in the afternoon of the third day, the village of Saint Pierre on Baie Saint Paul. Our entire voyage was most delightful; the scenery along the river is magnificent though not available for photography. It was not until we got ashore among the people of the village that we fully realized the kind of place we were in. I had long been anxious to visit the lower St. Lawrence, with the expectation of finding it a region I should enjoy, but I was surprised at the reality. Had we been landed in Normandy we could not have found a more picturesque lot of people. They were primitive in the extreme, unambitious, simple and unprogressive, poor and happy. Their farming is done with the simplest implements—wooden plows and other tools that must have been brought over by Jacques Cartier. They are nearly all of French descent, though occasionally you will meet one, whose name is English or Irish, who cannot understand one word of the English language. In the village we met but few who spoke English, that accomplishment being monopolized by the priest and the one government official. The priest administers the laws, settles all disputes and has an interest in any business that is profitable. They are clean to a fault and extremely temperate. The principal beverage for social drinking consists of a kind of small beer brewed in the village and sold for three cents a quart bottle.

"The approach to the town by water is peculiar. The bay is about five miles wide and the water rises and falls twenty feet; steamboats cannot approach the shore nearer than two miles, so at that point a lighthouse has been built on a crib, at which place passengers are landed. Sail boats from the village take you off the crib, and on nearing the shore you find the boat surrounded by buckboard wagons which are driven out into the water to receive travelers and convey them to land. Imagine two travelers and eleven drivers standing on their seats to keep out of the water, each one shouting as though his life depended upon the noise he made, and expecting me with my precious load of dry plates to stand on the seat also, while they drove me ashore. This to me was the most amusing thing I saw during my entire trip. I afterward exposed a plate on a similar scene which I unfortunately spoiled by double exposure.

"The people are very hospitable, and the rates they charged for board and lodging are in agreeable contrast to the usual charges at watering-places. The principle street straggles through the village like a cow-path, and the houses are built with little or no regard for the angle of the street. Each house has a Latin inscription placed upon it by the priest to keep away earthquakes and the devil. We saw the priest passing through a potato patch chanting a prayer and sprinkling holy water to keep off the bugs, and my friend irreverently told them that Paris green was much better than either. Along the roadways are placed picturesque shrines about a quarter of a mile apart. The day after our arrival was Sunday. Early in the morning the people commenced to come in to church; those living at a distance driving with every conceivable kind of vehicle, from a caleche to a cart with chairs placed on them for the female portion of the family to sit on. The women passing directly in to church while the men gathered in groups to talk over the weather or local gossip. When it was time for service to begin the town constable came out on the church steps and told them all to come in; had any refused he would have had the power to arrest them. After service the village crier in a loud voice cried out the news of the week, and ended up by stating that there was to be a dance that Sunday afternoon in the next village and the congregation were invited. We were afterwards told that horse-racing was their principle Sunday amusement.

"The region abounds in scenery worthy the artist's brush or camera. The place is very old, and between the people, windmills, fishing boats, etc., one can find something well worth photographing on every hand.

"We sat on the bank of a stream that runs the village mill and watched the trout that played in hundreds in the pools. Wild strawberries were abundant and were given us at every meal. We met men of an advanced age who had never been away from the village, and who knew of steamboats only by seeing them in the distance. As to railroads, they may have heard of such a thing but will go to rest with their fathers without ever traveling on one. Some of the people are well-to-do, having made their money fishing and coasting. At midnight twice a week the postman goes through the village blowing his horn.

"To the artist or photographer I know of no other place on this side of the water where such pictures as those of Jules Breton and Hagborg can be found in reality. Each man, woman and child drops into a natural and graceful position, and so far as appearances go are quite unconscious that they are being used as models.

"When the time came for us to start for home it was only with regret that we said 'Good-by' to these simple people, and with the determination to return at the first opportunity.

"The four hours passed on the crib, waiting for the steamer to take us off, were used in exposing six plates on the lighthouse keeper and his family. Owing to under exposure these last were photographically a failure, but from an artistic point equal if not better than anything I have done."

GROUP OF THE OFFICERS OF THE P. A. OF A.

We are indebted to Mr. F. W. Guerin, of St. Louis, for a handsome large picture, the group of the officers of the Photographers' Association of America for 1888. This is one of the best pictures of these gentlemen we have yet seen. Every year we have received fine groups of the officers of the association; but the present picture surpasses them all in the excellence of the grouping, the lighting and the fine finish of the photograph.

[*From Year Book of Photography.*]

FREWING'S METHOD OF PHOTOGRAPHING ON WOOD.

Make up:

Gelatine	2 drams.
White curd soap	2 "
Water	16 ounces.

Soak gelatine for some hours, then dissolve in a hot water bath. Add the soap in small shavings, stir with a glass rod until well mixed, and then add powdered alum until the froth disappears. Strain through muslin.

The wood-block is now coated with this mixture and a little zinc white, and rubbed well into the block with the thinnest possible coating, and finished off smoothly and evenly all over, and allowed to dry; after which, the following composition is applied to the face of the block with a camel-hair brush; the brush should be a wide one, as the marks of the join sometimes show in the finished picture if not carefully and quickly done; one coating with the brush from end to end of the block in one sweep is sufficient. Then dry.

Albumen	1 ounce.
Sal. ammoniac	18 grains.
Citric acid	5 "
Water	6 drams.

Beat the albumen to a froth and allow to settle, using the clear part; add the water; then the sal. ammoniac, mixing well with a glass rod; finally the citric acid. When the block is again dry, it is ready for sensitizing.

Sensitizing Solution.

Nitrate of silver	50 grains.
Water distilled	1 ounce.

A small quantity of this is poured on the block and coaxed over the block with a glass rod, the surplus put in another bottle for filtering for future use. When dry, the block is ready for printing under a reversed negative. It should only be printed just as you would like to see it, as it does not lose in finishing. When sufficiently printed, hold it, face down, in a dish of strong salt and water for about three minutes. The picture will slightly fade under this treatment. Now well wash under a spray of water, and fix in a saturated solution of hypo-sulphite of soda, holding the block face down on the solution for four or five minutes, which will bring back all the original detail. Now well wash under a spray of water for about ten minutes. Stand on end to dry. It is then ready for the engraver.

ANTHONY'S
Photographic Bulletin.

EDITED BY
Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.,
and a corps of practical assistants.

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E. & H. T. ANTHONY & CO., Publishers.

PHOTOGRAPHIC SECTION OF THE ROCHESTER ACADEMY OF SCIENCE.

REGULAR MEETING, MARCH 13, 1888.

THE demonstration of the bleaching and redeveloping of bromide prints, as announced at last meeting, was given by President Croughton, and the tones produced gave the best of satisfaction, and were a great improvement on the original. The following formula was used:

No. 1.

Saturated solution potassium oxalate........... 6 ounces.
Saturated solution ferrous sulphate .... 1 ounce.
Solution potassium bromide (1 ounce to 16 ounces water)............ ..20 minims.

No. 2.

Solution cupric chloride (15 grains to the ounce) sufficient to cover.

After prints are washed free from hypo, place them in number 2 until thoroughly bleached. Then wash and immerse in number 1 until redeveloped; afterwards wash thoroughly. The cupric chloride solution can be used until exhausted.

President CROUGHTON also recommended this manner of treating prints as also applicable to the intensification of negatives.

The "Toning of Albumen Prints," by C. F. Hovey, was the subject announced for the next meeting.

Yours truly,
MILTON B. PUNNETT.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

REGULAR MEETING, MARCH 6TH, 1888.

President H. J. NEWTON in the chair.

The Secretary reported the receipt of the usual journals and papers contributed monthly to the section.

The chairman of the executive committee reported that at the next regular meeting, April 3d, Dr. O. G. Mason and Professor L. H. Laudy would entertain the section; and the subjects they proposed to treat would be duly announced in the invitation notices of the meeting.

The informal meeting for March 21st was also announced, and a cordial invitation to all specially interested in photography to attend and take part in the discussions.

The chairman then stated that the programme for the evening was a lantern exhibition by E. C. Townsend, Esq., and a contribution of slides by members of the section. But before this exhibit, the President desired to make a brief statement relative to a matter he had called the attention of the section to at the last regular meeting.

President NEWTON then said:

Ladies and Gentlemen,—At our meeting in February I referred to a letter I had received, in which exceptions were taken to what the writer supposed I said about the proper methods of making lantern slides. I read for you from ANTHONY'S BULLETIN what I said, which made it apparent that the writer of the letter alluded to was laboring under a misapprehension as to what I said on the subject at the time alluded to.

I make these remarks that you may better understand what I wish to say this evening. My position was, and is, that any process by which a good negative can be made is capable of producing good positives.

To illustrate this idea, in its application to a gelatine dry plate, I start with the fact that the gelatine carrying the bromide of silver is perfectly white and transparent. To show this I put an unexposed plate into a solution of hyposulphite of soda and dissolve the bromide of silver. This leaves the gelatine film as transparent as the plate I now show you. Without careful examination you would doubt whether there was anything on the glass. To make this obvious I made the mark which you will observe on the end of the plate while the gelatine was yet soft. I am inclined to think that no one will object to a film of this character. The problem is how to keep it as it appears now, after exposure and treatment with the developing and fixing solutions.

There are several developing compounds which can be successfully used, and the first I will mention is the ferrous oxalate. The second, hydroquinone, which can be compounded in a variety of ways, and each produces good results. One of these compounds, which has been published by Dr. Piffard and used successfully by many experts in the photographic art, is as follows:

Sulphite of soda	30 grains.
Carbonate of soda	30 ‘‘
Hydroquinone	6 ‘‘
Water	1 ounce.

This developer can be used repeatedly without losing its developing power. It is to be observed, however, that developers which can be and are used repeatedly, gradually show less energy in starting the image. This may probably be accounted for by the introduction of bromide absorbed by the developer from the films.

Another developer that has been found to work well is—

Soda sulphite	20 grains.
Soda carbonate	15 ‘‘
Hydroquinone	5 ‘‘
Water	1 ounce.

Another excellent developer is—

Soda sulphite	40 grains.
Soda carbonate	15 ‘‘
Pyrogallic acid	3 ‘‘
Hydroquinone	3 ‘‘
Water	1 ounce.

This last developer I have used repeatedly and found it good after more than a week's use.

I will give one more formula which will not stain the gelatine film and will produce superior lantern slides, and can be used all day without serious deterioration.

Soda sulphite	100 grains.
Pyrogallic acid	10 ‘‘
Sulphuric acid	3 minims.
Water	3 ounces.

In conclusion, it should be noted that in keeping the film free from stain it is not a peculiarity of the hydroquinone but of the sulphite. If the hydroquinone is added to the soda without the sulphite it turns a dark color, and after developing one negative becomes as dark as port wine. But the addition of the sulphite discharges most of the color and it can be used repeatedly, although it acts with much less energy than without the sulphite. It is no better than pyro, or in fact it acts as pyro does without the sulphite and the same as the soda-pyro developer, the only difference being that the pyro developer requires more sulphite to produce the same result.

There is no end to this subject of developers, but I have said, perhaps, enough to assure the diligent student of some few of the ways by which he may reasonably hope for success. I will now, therefore, introduce to you Mr. E. C. Townsend, who will, no doubt, more pleasingly instruct while he entertains us with descriptive views from many lands.

Among the many attractive views that Mr. Townsend exhibited were: Salt Lake City—The Mormon Temple; San Francisco and the Golden Gate; The Ruins of Karnak; Port Said; Constantinople and Pera; The Grand Canal, or the Watery Broadway of Venice; The Giant's Staircase in the interior of the Doge's Palace, Venice; The Cathedral of St. Mark; Castle of St. Elmo, Naples; St. Peter's, Rome; The St. Gothard Tunnel under the Alps; Views of Strasburg and Baden; The Church of Notre Dame, Paris, and the Champs Elysees; Tower of London; Westminster Abbey and Windsor Castle.

All these views, with many others, were briefly but interestingly described, and some of the most salient points connected with their history pleasingly related.

Following these were a miscellaneous collection by President Newton and Mr. A. D. Fisk. All the views were exhibited by one of the most effective and compact lanterns in the market and justly won the approbation of all those professionally engaged in this line of entertainment.

At the close of the exhibit, Dr. O. G. Mason called attention to some photo-lithotypes made by Milan P. Warner, Holyoke, Mass. These proofs were highly eulogized by many, and apparently regarded with favor by all.

Judge Shannon formally and very appropriately expressed in the form of a resolution the indebtedness of the audience for the instruction and pleasure received from the gentlemen who had entertained them, and a unanimous vote of thanks was then tendered to each for their contributions.

The section, on motion, then adjourned.

ST. LOUIS ASSOCIATION OF AMATEUR PHOTOGRAPHERS.

ST. LOUIS FEBRUARY 21, 1888.

THE REGULAR MEETING of the St. Louis Association of Amateur Photographers was called to order by *President* BAIN, with fourteen members present, a majority of the whole number of active members.

The minutes of February 7, 1888, were read and approved as read.

The Membership Committee reported on the applications for active membership, referred to it at the last regular meeting, recommending the election of John M. Desloge, Alfred M. Baker, William B. Potter, and John F. Valle as active members.

On separate ballot, the four candidates were elected, and the secretary was instructed to notify them of their election.

Due notice thereof having been given at the last regular meeting, Mr. Butler moved to strike out the whole of Section 5, Article III, of the present Constitution, fixing the manner of choosing Honorary Members, and to insert in lieu thereof the following—"Section 5. Any person may be elected an associate member by a two-thirds vote of the members present, and shall be entitled to all the rights and privileges of an active member, except holding office and voting, and shall pay the same initiation fee, dues, and assessments as an active member."

After a full discussion, the motion was adopted by a unanimous vote, there being fourteen votes in favor thereof, and none against.

Due notice thereof having been given at the last regular meeting, Mr. C. H. Holland moved to strike out from Section 1, Article I, of the Constitution, the following words—"St. Louis Association of Amateur Photographers," and to insert in lieu thereof the words—"St. Louis Camera Club." After full discussion, the *Secretary* called the roll of members. Those voting in the affirmative were—Messrs. Bain, Goodman, H. B. Alexander, Wilcox, Erker, C. M. Alexander, Blattner, Massot, C. H. Holland, and H. M. Holland, ten in all. Those voting in the negative were Messrs. Butler, Charropin, Dunn, and Johnston.

Not having received a constitutional majority, the motion was declared lost, and Mr. C. H. Holland gave notice of his intention renew the proposition at the next regular meeting.

Mr. Gustave Cramer was made an associate member, to date from January 1, 1888.

A vote of thanks was ordered to the St. Louis Photographer, for a file of their journal 1887, and for their courtesy in publishing the proceedings and papers of the association.

The *Secretary* reported that he had received a letter from Mr. George Bullock of the Cincinnati Camera Club, announcing a conference of the societies now represented in the Lantern Slide Interchange, to be held in Philadelphia, on Monday, February 20, 1888. As the date fixed was prior to the meeting of the St. Louis Association, and Mr. Bullock was to leave for Philadelphia on the preceding Saturday, February 18th, the Secretary was obliged to reply to the letter without laying the matter before the association. Under the direction of the President and of the Executive Committee a letter was written, setting forth the views of the association as elicited at the meeting of February 7, 1888, during the debate on the question of sending a delegate to the proposed conference. Of this letter, the following is a *resume:*

First—There should be a permanent organization for the Lantern Slide Interchange, having an appropriate title, and consisting of the societies now represented in the Interchange, and such as may hereafter be admitted.

Second—The membership should not be limited, and the only requirement therefor should be the furnishing of a set of slides by the society applying for membership.

Third—These slides should be uniform in size, 3¼ x 4 inches.

Fourth—The opening in the mat may be of any shape, not wider, or higher than 2¾ inches.

Fifth—The consecutive number of the slide should be placed on the upper left hand corner.

Sixth—No slide shall be again accepted for the interchange.

Seventh—Each society shall contribute about one hundred slides, and the Executive Committee of the Interchange should control their movement over the circuit.

Eighth—Negative and slide should be made by the same person.

Ninth—Each society should for itself decide what slides it will furnish to the interchange.

Tenth—The Interchange shall be directed by an Executive Committee of three, not members of the same society, chosen by the conference; they shall choose the slides for the International Exchange.

Eleventh—English slides, received in exchange, shall be divided by the Executive Committee by lot, or in some suitable manner, to the contributing societies.

Twelfth—The Executive Committee should prepare a circular setting forth the merits to be sought for in each slide and outlining the plans for the year, a copy of which should be sent each association at least three months in advance.

Thirteenth—If slides are not ready at the proper time, the delinquent society can be permitted to share in the interchange, only after a vote of the Executive Committee of which notice should be sent to all the other societies.

On motion of Mr. C. H. Holland, the action of the Secretary was approved by the association.

There being no further business, the association adjourned to meet on Tuesday, March 7, 1888, at 8 P.M. WILLIAM M. BUTLER,
Secretary.

ST. LOUIS CAMERA CLUB.

ST. LOUIS, March 6, 1888.*

THE regular meeting of the St. Louis Association of Amateur Photographers was called to order by President Bain, with nineteen members present.

The minutes of February 21, 1888, were read and approved as read.

Messrs. Staunton and Blattner, active members, unable to attend this meeting, authorized their proxies to cast their votes for the following proposed amendments to the Constitution, of which Mr. C. H. Holland gave notice at the preceding meeting, Mr. Vallé acting as proxy for Mr. Blattner and Mr. Desloge as proxy for Mr. Staunton.

Resolved, That the words "St. Louis Association of Amateur Photographers" be stricken out from Section 1, Article I, of the Constitution, and that the words "St. Louis Camera Club" be inserted in lieu thereof.

The ayes and noes being called for, the Secretary called the roll of active members: *Ayes.*—Messrs. Achterman, C. M. Alexander, H. B. Alexander, Bain, Butler, Blattner, Desloge, Dunn, Eiker, Hammerstein, C. H. Holland, H. M. Holland, Jewett, Masset, Staunton and Vallé—16 in all. *Noes.*—C. M. Charropin—Having received a majority vote of the whole number of active members, 27, the President declared the amendment adopted.

The Secretary read two letters from Messrs. Willis & Clements, of Philadelphia, offering to make the demonstration of the "platinotype proces" before the Association a success, by furnishing all needed materials, and added that he had accepted the proposals Mr. Edmund F. Wickham's application for active membership which was referred to the Committee on Membership for investigation.

The Secretary reported the balance in the treasury to be $101.15.

On motion, the papers of Dr. Goodman and Mr. Staunton were deferred until the next regular meeting, March 20, 1888.

The Secretary read a circular letter from the Pittsburgh Amateur Photographic Society, inviting this club to compete in the exhibition which they propose to hold at Pittsburgh, during the coming month.

On motion, the Secretary was instructed to acknowledge the invitation, and to say that the Club would be unable to make any collective exhibit.

Not having been able to procure filing cases for the periodicals, the Secretary was granted further time to obtain them.

The critique of the Boston Camera Club on the St. Louis lantern slides was read by the Secretary and was much applauded by the members.

The Secretary was authorized to purchase a suitable letter book and copying press, and to have new note heads printed for the use of the club.

The proposed constitution of the American Lantern Slide Interchange, drawn up at the late conference in Philadelphia, held on February 20, 1888, was read by the Secretary. After a full and careful discussion, it was unanimously adopted by the club and the Secretary was directed to so inform Mr. George Bullock, the temporary manager of the Interchange. It was further resolved that it was the sense of the club that itemized accounts of the receipts and expenses of the Interchange should be published, from time to time, in some photographic journal.

The club then adjourned to the large hall of St. Louis University, where the lantern slides of the Photographic Society of Philadelphia were thrown on the screen, and excited universal admiration. It was decided to exhibit them publicly, at St. Louis University, on Tuesday, March 13, 1888, at 8 P.M.

There being no further business, the club adjourned to meet on Tuesday, March 20, 1888, at 8 P.M. WILLIAM M. BUTLER,
Secretary.

PACIFIC COAST AMATEUR PHOTOGRAPHIC ASSOCIATION.

To the Editor of the BULLETIN:

IT may interest your readers, and particularly those who have visited this coast, to hear a few words about the Pacific Coast Amateur Photographic Association.

The Pacific Coast Amateur Photographic Association, with its rooms and headquarters at San Francisco, is still in existence, notwithstanding the fact that you have heard nothing of us for a good while.

The association has comfortable rooms at the corner of Montgomery and Merchant streets, furnished to suit their requirements, and having a large and conveniently arranged dark room. The officers are: *President*, Mr. GEORGE TASHIERA; *Vice-President*, Mr. A. J. TREAT; *Secretary* and *Treasurer*, Mr. HERBERT S. HERRICK; *Corresponding Secretary*, Mr. GEORGE W. REED. Membership, sixty. Meetings are held regularly on the first Thursday after the first Monday in each month, and are well attended.

During the past year lectures have been given by both professional and amateur photographers, and an exhibition of photographs and lantern slides, which was very successful, was held at the rooms of the Art Association in December last.

The last monthly meeting was unusually interesting, as we had for our guest our mutual good friend and most excellent brother hypo, Mr. H. S. Bellsmith, who is at present in this city, demonstrating and introductng the specialties of the Eastman Company, of Rochester.

Mr. Bellsmith entertained us for two hours with a full description of the negative film process, and made not a few of our fellows converts to "strippers." He also exhibited a number of positives, on various substances, plain glass, opal, porcelain, shell, wood, etc., made by the transferrotype process, all of which were much admired by the members and visitors present. The gentleman also exhibited some lantern slides (transferrotype), which he claimed to be as good or better than those made on glass plates. The opportunity to see them on the screen was lost, as the lantern was not at hand. There will probably be an informal meeting held in the near future for the purpose of testing these slides, and also as a compliment to, and for the entertainment of, Mr. Bellsmith, for whom all of us have the highest regard.

I should be pleased to correspond with the secretaries of similar organizations to our own in regard to an exchange of lantern slides, prints, etc., for our mutual benefit. Address, 605 Merchant street.

The BULLETIN comes to us regularly, and we find much in its columns to instruct and enlighten us in our art-science.

Yours truly,
GEORGE W. REED,
Corresponding Secretary.

BOSTON CAMERA CLUB.

BOSTON, March 6, 1888.

A REGULAR meeting of the club was held at the rooms on Monday, the 5th inst., at 8 o'clock P.M.

In the absence of the President and Vice-President, Mr. HENRY W. SWEET was elected *President pro tem.*

The principal business of the evening was to hear and act upon the report of the conference of clubs constituting the Lantern Slide Interchange.

The club unanimously voted not to approve the plan as submitted, as certain features, notably the admission of professionally made slides, the absence of all data as to methods employed in making, and the provision that labels must be placed upon a certain portion of the slide. Our club was the first and almost the sole member of the exchange to adopt a system of mounting and matting slides, and as they have provided themselves with mats, etc., which would have to be sacrificed, feel that any arbitrary rule on this point would be unjust. We fully concur in the rule that all slides in an invoice shall have invoice number in the same relative position.

Our club feels strongly that if the Interchange is to be productive of good to its members by promoting the advancement of slide-making as a branch of amateur photography, by interchange of work and of friendly criticism, that professionally made slides should be excluded; and further, that data, processes and methods of making should constitute an important feature of the Interchange.

Mr. Reed was authorized to take such steps as may be necessary to carry out his plan of a lecture on "Boston and its Suburbs," to be illustrated by slides, the work of members of the club.

The Pittsburgh slides will be shown on the 12th inst.

EDWARD F. WILDER,
Secretary.

I cannot get along without it (THE BULLETIN). A. P. HALLOCK, PH. D.

THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

REGULAR MEETING, JANUARY 10, 1888.

(*Continued.*)

The *Chairman*—Are you ready for the question?

Dr. PIFFARD—I do not think, Mr. Chairman, that that would be a wise innovation, and I do not accept the amendment, and I call for the question on it.

The amendment as just suggested by Mr. Canfield was then voted on and carried.

Dr. PIFFARD—I would ask that Mr. Canfield draw up that entire section in writing, including his changes, so that we may know what we are voting on.

Mr. WILLIAMS—Is there not a provision, as in the case of other incorporated companies, that the members of the society shall elect a Board of Trustees, and that the Trustees shall elect the officers? I ask for information.

Mr. CANFIELD—I think that that simply calls for the qualification of a certain number of Directors. It does not state, if I am correctly informed, the manner in which they are selected. The amendment which I offer reads in this form, if the Stenographer will kindly take it down: "The annual meeting of the members of the club shall be held at such time and place as may be specified in the By-Laws, and may be adjourned from time to time, if necessary. There shall be elected by ballot at each annual meeting, a President, a Vice-President, a Secretary, a Treasurer and eight other Active Members, who shall constitute the Board of Directors of the Club, and who shall hold office for one year, or until their successors be elected and qualified."

Dr. Piffard then continued reading his proposed constitution down to the section providing that the officers of the club should make reports at the annual meeting, when the following discussion was had:

Mr. CANFIELD—I cannot carry the amendment as read by Dr. Piffard wholly in my mind. I had, however, the idea of introducing into the duties of the Treasurer the duty of making a quarterly report to the society. On the basis of making an annual report there is no means provided whereby members of the society could know the state of the finances or the prosperity or the reverse of the club, and it seems to me it would be no hardship to require the Treasurer to do this. It would be an undoubted assistance to the members of the society. (Applause.)

Dr. PIFFARD—Are you willing to defer that matter until the duties of the Treasurer come under consideration?

Mr. CANFIELD—Yes, sir.

Dr. Piffard then continued to read his proposed constitution, and read down to and including Section 1 of Article V of the same, which was, on his motion, seconded by Mr. Stebbins, carried and recommended for adoption.

Dr. Piffard then continued to read his proposed constitution down to the section providing for amendments to the Constitution and their adoption by a "vote of not less than two-thirds of the active members present and voting," when the following discussion was had.

Dr. PIFFARD—I move that this Committee recommend the adoption of that article by the society.

Motion seconded.

(*To be continued.*)

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

Q.—J. M. B. writes: Will you explain in the next number of the BULLETIN the process of photographing on wood, or if the subject is too long for this column, please tell me where I can learn it, or some work that explains it, so that I can understand it intelligently?

A.—See full explanation in the BULLETIN for 1887, pages 76 and 107. February 12th and 26th.

Q.—E. Brothers write: Will you please tell us through the BULLETIN the best way to make the fixing solution for prints, so that it will not turn them brown, but leave them the same "rich tone" as when they come out of the toning bath when toned properly?

A.—Use ammonia in the fixing bath; about one dram to a quart of bath works very well.

Q.—E. H. R. writes: I have a bromide print, about 18 x 20, vignetted, which I want to frame. Can you tell me what is the proper sort of frame to put on it? I do not want the most expensive, but that which is conceded to be the most tasteful. Will you kindly tell me?

A.—We like an oak frame, narrow or broad, according to the size of the picture, with a matt of very rough manilla cardboard.

Q.—J. A. H. writes: Inclosed please find and examine a print I made a few days ago. You will see it is considerably damaged. I was using a good bath although it was about sixty grains strong—silvered about one minute and blotted on two papers as usual. If the fault is not in the paper, please be so kind as to point it out to me.

A.—The trouble looks very much like dirty blotting paper; but the same result can be obtained by using too cold a silver bath. Take care that the blotting paper is clean, or better yet, let the paper drain without blotting off. Be sure bath is over 60 degrees F. in temperature.

Q.—E. L. S. writes: Can you tell me, through the BULLETIN, anything about making portraits by the electric light? Is any special arrangement necessary, and how should the light be arranged in regard to the sitter? Also, how does the time compare with those taken under a skylight?

A.—Read the article by Hector Krauss in BULLETIN for 1886, page 372.

Q.—D. J. & Co. writes: Please to advise us at your convenience, if you think steam heat is suitable to use in a dark room. Also, is varnish and paint objectionable to have in a dark room while silvering paper at the same time? Your answer with full particulars will greatly oblige.

A.—There is no objection to steam heat in a dark room if proper ventilation is also provided for, and an easy method of regulating the steam. Paint and varnish are both objectionable when freshly put on; they produce fog on dry plates when they are stored in such a room, and probably fog plates during development. Better to use black or red paper on walls.

Q.—T. G. W. writes: Will you please inform me, through your BULLETIN, what causes the N. P. A. Albumen Paper, after floating three minutes on a 60-grain silver bath, to repel the silver in small spots, so the paper on back is full of concaves and bunches on face; some sheets do not do so, while others, a part of the sheet. I put in bath as much nitrate ammonia as I do of silver, and add a few drops of Ammonia.

A.—This appears to be a case of photographic tears. Rub the paper on the albumen face with a clean tuft of soft cotton before floating.

Q.—Ad. G. writes: Can you not give me a good receipt to make developed solar prints or any good process to turn out a large quantity of solar work by electric light, or let me know where I can buy such?

A.—Methods for solar printing can be found in the "Silver Sunbeam," issued by our publishers. But the best thing to do is to use the Reliable Bromide Paper and make prints by development with this. These are much superior to solar prints after a little practice in the matter of timing and development.

Q.—W. C. R. writes: I see mentioned in the BULLETIN hydroxylamine, hydrochinon and hydrokinone; are they all the same or different? Are the two last named chemicals the same?

A.—Hydroxylamine is entirely different from the other compound you mentioned. See Stebbins' article on "Hydroxylamine" in BULLETIN, page 141; also article in BULLETIN for 1887 on "Hydroquinone," page 641. Hydrochinon and hydrokinone are incorrect names; hydroquinone is correct, although they all mean the same compound, but are used very carelessly by authors.

Q.—W. P. C. sends us a magnesium flash picture taken at night and writes: I inclose photograph taken at night and developed with hydroquinone. What do you think of it?

A.—The picture is quite good, yet it lacks detail in the shadows. Next time try exposing with a good gas or lamplight in the room and the enlargement of the pupils of the eyes will be avoided, and you will get more detail in the shadows.

Q.—J. R. M. writes: Inclosed please find two prints which are covered with peculiar spots. What is the cause of this trouble?

A.—The cause of the spots is probably too cold weather. Either the silvering room was too cold or the bath was cold. The spots are due to the crystallizing of the silver nitrate used in sensitizing, owing to the chilling of the paper before it had time to drain properly.

Q.—T. H. writes: Please give, in the next BULLETIN, the formula for toning prints with chloride of platinum. I have tried it with no success as yet. It is mentioned in "English Notes" in the BULLETIN of February 11th. Is it necessary to use acetate only with it?

A.—The formula given in "English Notes" appears to be a good one, although we have not tried it. Acetate of soda alone should work well. A more detailed description will be found in the BULLETIN for 1887, page 161 which see.

Q.—A subscriber writes: I have west sky.

light and wish to reglaze the lower third of it, and before doing so wish to consult you as to the wisdom of using corrugated glass. The full size of sash is about 16 feet square. I use inside fans and also curtains and cannot effectually overcome the strength of the sun when it shines on the light in the afternoon. I had thought that less curtain and more light of the right kind would be better. Should I use it, which side up is the better way to place the glass? Would the rays of light be distributed better by first striking the corrugated surface or by first passing through the glass, and is there any difference which side up, as to keeping clean, etc., and can you tell me where such glass is made and is it very expensive?

A.—We think it would be better to use kalsomine on the inside of ordinary glass, and put it on so as to produce a frosted surface; any painter will know how. Don't use paint unless you use zinc white. Be careful not to get a yellow tint in any case, and a very faint shade of blue in the kalsomine will overcome any tendency to yellowness in that case.

Views Caught with the Drop Shutter.

Mr. A. D. Fisk, of Murray Street, New York sends us a handsome catalogue of photographic apparatus, lanterns, etc., which contains a greater variety of forms and sizes of the various implements than many of the lists that come to us. It is well printed and profusely illustrated, and forms an excellent compendium of cameras, lenses, lanterns, etc.

From Roberts & Fellows, of Chestnut street, Philadelphia, we have received an excellent catalogue of Optical Lanterns, which for those who are looking for lantern slides, and lantern apparatus, is one of the best illustrated and descriptive lists that have lately come to our notice.

Messrs. Herlocker & Schaad, of Freeport, Illinois, send us a handsome little mosaic souvenir for 1888. This consists of a very artistically arranged mosaic of some of their fine work together with a neat calendar. The idea is unique and well done.

Another pretty souvenir lies on our table from W. R. Wright and wife, of Princeton, Indiana. This is a card with a small photograph and artistic silver lettering on a black ground with gold scroll work, the lettering being some poetic lines on the photograph. This idea also is a novel one, and the whole affair speaks well for the artists that designed it.

Buchanan, Bromley & Co., of Philadelphia, send us a batch of circulars, bargain lists, etc. Those who are looking for cheap apparatus should write these gentlemen at 1030 Arch street, Philadelphia. They are obliging and will give you every attention.

Messrs. Smith & Pattison, Chicago, have moved from Wabash avenue to 261–263 State street, where they occupy a new six-story double building, 40 x 150 feet, with two steam-elevators, and all the modern improvements for rapid shipping, etc.

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Evening Post Job Print, N. Y.

ANTHONY'S

Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

APRIL 14, 1888. Vol. XIX.—No. 7.

THE BOSTON EXHIBITION.

THE second exhibition under the auspices of the United Societies of New York, Boston, and Philadelphia is to take place in Boston, May the 7th to 12th inclusive. We note with much satisfaction that there is to be no restriction as regards the pictures of professional photographers. If amateurs are ambitious to excel let them compete with professional workers.

Another good thing that we note in looking over the announcement of the exhibition is that the names of the makers of the pictures are not to be displayed, but will be placed upon the backs of the frames that hold the pictures. This is a grand, good departure from previous regulations. Every one will be placed upon the same footing, and the pictures will be judged, each upon its own merits, without regard to name of maker or his previous record. Of course care should be taken that the judges do not become acquainted with the names upon the backs of the pictures; and, furthermore, we think it would be a good plan to secure judges that are not exhibitors, and these should also include a good artist and a good photographer. We would also impress upon exhibitors the importance of submitting to the decisions of these judges, whoever they may be. It is a thankless task usually to be asked to act as judge in a photographic exhibition. All kinds of hard names are called, and all kinds of unjust criticism is indulged in, no matter how honest the individual judges may be.

Those who send pictures to Boston should leave them to the good judgment of the gentlemen who are the committee of arrangements, trusting that they will secure competent judges. This committee is composed of men well known in the photographic world, and above all things they are gentlemen. Therefore send exhibits and have faith in the result, and rest assured that if you have merit in you it will be appreciated, and if you have not, be not discouraged; it is one of those lessons that we are all the better for learning. Go back to your darkroom again, get outside yourself, and believe that the honest judgment of your fellow-men is worth having, although it may not flatter you.

We sincerely hope our New York society will do better at Boston than it did at home here in this city at the last exhibition. The number of exhibitors from the New York Society last year was larger than those of either Boston or Phila-

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delphia, but the number of prints and the variety of subjects was by no means representative of what can be done by the members of our society. By this we do not mean that members should send a large number of prints for the sake of numbers and neglect quality; but we do think that single pictures cannot be called a fair exhibit of the work of any member of the society. If it was a question of competing for the illustration of some idea or subject, then individual pictures would be in order; but where it is the exhibition of photographic and artistic skill in general, single lucky hits with camera and lense should be judged with the more ordinary work of the exhibitor. At the same time there should be a limit to the number of pictures allowed to each exhibitor, at least to those placed in competition. These ideas have been carried out in the rules for the exhibition of the Photographers' Association of American, and we think some modification of them to suit the circumstances should be applied to the Boston Exhibition.

There will be no admission fee charged at Boston, cards of admission being obtained free by applying to the members of the exhibiting societies. We think this is a good idea, and hope that the committee of arrangements will not be in financial straits when they get through with the exhibition. At any rate the experiment is worth trying, and the treasuries of the several societies will not be greatly taxed to make up the deficit, if there should be one. At the same time a small fee will often prevent a crowd of mere curiosity seekers that often infest free exhibitions of all kinds; therefore care should be taken to limit the cards of admission to such numbers, that people who are interested in our art may see the pictures without being crushed and annoyed by those who come for curiosity alone.

We hope every member of each society will contribute a number of good examples of his or her work, and that the exhibition at the "Hub" will be a greater success than the very successful collection seen at Ortgie's gallery in New York last year.

EDITORIAL NOTES.

We are indebted to Mr. John Bartlett, of Philadelphia, for a capital example of photographic composition in a picture called "Market Day," which represents a woman surrounded with apples, cabbages, melons, corn, and other necessities for the table; whilst a second woman, with basket on arm, is selecting a cabbage for dinner. The two figures, the surroundings, and everything that pertains to the story told, is so well done that we have an ideal genre picture. It is seldom that we see such good artistic photography; and the reproduction of the original by the well-known process of Fred. E. Ives is exceedingly well done.

Nocturnal photography is still the order of the day. We have before us several examples of this latest development of the art. Two groups made with McCollin's Blitz-pulver are quite good. There are five figures in each group, and the shadows are well defined. The light was well managed and the figures look life-like, the eyes being free from the usual stare. Another picture is an 8 x 10 print of a group of twenty-one figures, a birthday party of Master F. F. Clark, of St. Louis, taken at 9 o'clock at night. This last picture is a good photograph, but the light was poorly managed, the eyes in many of the figures having an unnatural stare.

The Columbus Camera Club, a development of the Columbus Amateur Photographic Club, has recently gone into new quarters, and with a new Constitution admits both professional and amateur photographers. The Rev. George W. Lincoln is *President*, and F. H. Howe, *Secretary*. At the suggestion of Professor A. H. Tuttle, of the Ohio State University, a committee was appointed to invite the co-operation of other photographic clubs throughout the State to make an exhibit of the work of amateurs at the Ohio Centennial Exhibition.

The preceding note calls to mind the effort recently made by the New York Society of Amateur Photographers, to change its name to the New York Camera Club. Almost every other club has adopted this shorter and more convenient title, but the New York Society still adheres to its old name. We are satisfied that the shorter name would take nothing from the former glories of the society, and if the society is living on the laurels won by older members it is weaker than we think. We do not believe the change of name means any loss of glories already won, and there are as good men, and more of them, in the society to-day than ever there was. Let us have a shorter name, and a comprehensive one.

We have before us a capital moonlight view of the Smithsonian Institution, Washington, D. C., taken on a Stanley plate between 8.30 and 10.30 P.M., January 28th last. This is the work of Mr. Daniel Fraser, of Washington, who used a soda-pyro developer, and says that the negative came up in eight minutes. The subject is a bad one in daylight, for the building is constructed of dark red sandstone; but this moonlight view is particularly good, and the details in the shadows well brought out.

One of the most enjoyable evenings recently spent at the Society of Amateur Photographers, New York, was a special meeting called to see some of Mr. W. H. Walmsley's latest achievements in photomicrogaphy. The exhibition was very good; a large number of slides of photomicrographs of diatoms, parts of insects, blood and other objects were thrown upon the screen, and the work shown was very much admired. On another page will be found a detailed report of Mr. Walmsley's paper on the subject; but the slides should be seen to be appreciated.

The Cleveland Camera Club are to have a field-day on May 30th next (Decoration Day). We think our New York societies should have an outing in the early spring—it is decidedly the best time of the year to get foliage. Orthochromatic plates would be in order.

Professor Young, of Princeton, in a recent lecture at Richmond College, Va.
n speaking of astronomical photography said: "Probably it would be going too
ar to say that the instruments of the 'New Astronomy'—the camera, spectro-
cope, bolometer, and photometer—can either or all of them increase the range
nd power of astronomical inquiry as much as the invention of the telescope
lid. But their effect is quite analogous. In certain lines of work they threaten
o supersede the old instruments as completely as the old quadrants and astro-
abes of the Greeks and Arabs were superseded by the meridian circles and trans-
ts of to-day. The whole art and theory of astronomical observation is changing
efore our eyes, and the observatory of 1988—perhaps of 1938—is likely to differ

as much from that of to-day as the observatory at Washington or Pulkowa from that of Tycho Brahe.

The third annual exhibition of the Pittsburg Amateur Photographers' Society was held March 27th, 28th, 29th and 30th. About four hundred pictures were shown, the most interesting being examples of the new magnesium flash-light illumination. The exhibit, consisted of pictures by Messrs. Jay R. Jenkins, Robert L. Henderson, Frank Buffum, George Bruce and Robert Lysle, of Alleghany, which were of interest, not only because of the method of taking them and the artistic manner in which they are finished, but because of the excellent character of the subjects chosen. A notable exhibit was that of William J. Hunker, of the Alleghany County Electric Light Company. Many other good pictures were also shown, and the exhibition was a very successful one.

The Second Annual Exhibition of the Societies of New York, Boston and Philadelphia open to all photographers, foreign or American, professional or amateur will be held under the auspices of the Boston Camera Club, May 7th to 12th next, at the gallery of the Boston Art Club, Newbury and Dartmouth streets, Boston, Mass. Details of rules, etc. will be found on another page. Exhibitors should be at work now on their pictures.

From Ed. V. Boissonnas, of Geneva, we have recived two remarkably good photographs of fire-works at night. These illustrate in a very unmistakable manner the wonderful actinic effect of the various pyrotechnic compounds, and the sensitiveness of modern dry plates. One of the above pictures represents illuminations on the river Rhone and with red and green bengal lights; the other, the road along Lake Geneva, illuminated on July 28th last, with the same colored fires, together with a bouquet of fire-works, and the boats on the lake illuminated with Venetian lanterns. They are very interesting pictures and the work of M. Fred. Boissonnas, the brother of the well-known Geneva merchant of that name.

[*From our Special Correspondent.*]

ENGLISH NOTES.

I have just returned from a trip to London, undertaken mainly with the object of giving some account to the readers of Anthony's Bulletin of the photographic exhibition at the Crystal Palace, and of the Second Annual Conference of the Camera Club.

Arriving in the metropolis, I found the walls well "billed" with announcements—in letters two feet high—of the Palace Exhibition, and, getting into a train at Victoria Station, a short half-hour's run placed me inside the famous glass house which was transplanted from Hyde Park to Sydenham after the great exhibition of 1851.

Arranged on stalls running down the center of the lofty nave, there was a very extensive and complete collection of photographic apparatus. Each stall had its attendants, and as the crowd of visitors passed up and down, everyone was kept busily at work, examining or explaining the grand show of cameras, lenses, and the thousand miscellaneous articles now forming part of the stock in trade of a photographer. On the whole, I think this was the best collection of apparatus I have ever examined; a fact largely due to the space for the exhibition being practically unlimited.

The pictures were in another part of the nave, and included over seven hundred frames. Our chief professionals—Vanderweyde, Lafayette, Mendelssohn, The Photographic Company, Byrne, Winter, Cartland, Robinson, Sutcliffe, Pointer, Frith, etc., were well represented, and the general quality of the work was very good. Altogether for apparatus about twenty medals, and for pictures more than thirty medals were awarded, besides many Certificates of Honor. The Paget Dry Plate Company took the medal for plates; Dallmeyer and Voigtlander for lenses; Dallmeyer again for a new instantaneous shutter (this is a splendid thing); and Marions for "general appliances and plant," including a portable studio and dark-room. All the work of the exhibition was done by an "Executive Committee" of three practical photographers—Messrs. Hyslop, Peasgood and Willaston. The evening exhibitions with the optical lantern were a pleasing feature of the big show; and a thirty-foot disk was brilliantly illuminated from a distance of 100 feet by the triple lantern (used with compressed gases in steel cylinders) exhibited by the Messrs. Oakley.

After spending ten hours at the Crystal Palace in really hard work on the Saturday, Sunday came as a welcome day of rest; but by Monday morning I was ready for all that the Camera Club could do for me. Wending my way to the headquarters at 21 Bedford street, Strand, I found the walls of the large and comfortable domicile belonging to the Club covered with a new and admirable selection of the work of the members; and on the same evening (March 12th) listened there to a most enjoyable vocal and instrumental musical performance by the members and their friends. With Valentine Blanchard and H. P. Robinson on one side of me and B. J. Sayce and William Adcock on the other; "lashin's of good drink and baccy" (as Pat says) in front of me, and sweet sounds to titillate my auditory nerves, no wonder I felt happy! But all good things must end, and the smoking concert broke up early, so that all might be in good trim for the work of the Conference next day.

For the purposes of a conference the rooms of the Camera Club would have been all too small; but having a kind "friend at court" in the person of Mr. H. T. Wood (Secretary), permission had been obtained to use the capital rooms of the Society of Arts, in John street, Adelphi. After examining an excellent collection of photographic apparatus exhibited in the library, Captain Abney, R.E., F.R.S., the President of the Club, took the chair at two o'clock on Tuesday, March 13th, and declared the Conference open; about ninety members and friends being present. As you will probably reprint some of the papers I shall content myself here with the briefest possible list and comments.

Dr. D. G. Thomson.—"The Application of Photography to Medicine and Allied Sciences."

H. Trueman Wood.—"Applications of Photography to Science."

These two papers were, practically, *resumes* of what has been already done. In the discussion which followed, Mr. Jerome Harrison called for the appointment of a State photographer, whose duty it should be to transmit to future ages a sufficient, accurate, and permanent record of men and things in the nineteenth century. He also asked that some Government department should undertake the testing of lenses, etc., in the same way as thermometers, chronometers, etc., were now tested at Kew Observatory. Certificates should be issued giving particulars as to the performance of each lens. This proposition was supported by Mr. Dallmeyer, and received the approval of the President, who, however, saw some difficulties in the way.

J. Traill Taylor.—"Single Lenses Corrected for Architecture."

G. S. Waterlow.—"Modern Photographic Printing and Engraving."

Dr. G. Lindsay Johnson.—"A Standard System of Weights and Measures."

W. Willis.—"A Recent Improvement in Platinotype."

This consisted in putting the platinum salt in the developer instead of on the paper, thereby enabling the former to be used *cold*.

J. E. Mostyn Clarke.—"The Present Value of Art in Photography."

Owing to want of time, this last paper was "taken as read."

On the evening of this, the first day of the Conference, a lantern exhibition was given in the Rooms of the Society of Arts, to which Messrs. J. Gale, George Davison, and other well-known workers contributed.

The second day of the Conference, Wednesday, March 14th, found a good audience present; for a rumor had gone round that Captain Abney had a very important paper to read, which would upset the vexatious Attout-Tailfer patent for ortho-chromatic photography, now held by the firm of B. J. Edwards & Co.

Captain Abney.—"The Theoretical Aspect of Ortho-chromatic Photography."

In this lengthy paper the sting came in the tail, where the gallant captain announced that all that need be done to render any plate ortho-chromatic, was to make a solution of the dye (eosin, cyanin, etc.,) in varnish or in collodion, and simply pour it over the plate. As the action of light takes place *at the surface*, it is sufficient for the dye to be in contact with the *surface molecules* of the silver bromide, and the action—once commenced—will spread downwards. As the existing patents are only for (*a*) mixing a dye with the emulsion, and (*b*) soaking plates in an aqueous solution of the dye, it will be seen that Captain Abney's method differs from either of them, and may be freely practiced, for, all honor to him, he gives it freely for the use of all.

Lyonel Clark.—"The Metamorphoses of the Silver Image."

T. Dallmeyer.—"On a further Development and Simplification of the Standard of Comparative Exposures proposed by Dallmeyer."

Sir David Solomons.—"On a Ratio Slide-rule."

W. E. Donkin.—"A New Form of Sensitometer."

A. Pringle.—Centrifugal Separation in Emulsion-making."

On the evening of the second day nearly a hundred of those who had taken part in the Conference dined together at the Holborn Restaurant, with Captain Abney in the chair. After the usual loyal toasts, the "Camera Club" was given by Mr. B. J. Sayce, the veteran inventor of the collodio-bromide process (1864), who had journeyed up from Liverpool especially to attend the Conference. "The Visitors" (acknowledged by Jerome Harrison), etc., etc.

Some proof of the energy of the officers was afforded by the appearance, on Saturday, March 17th, of a special number of the Journal of the Club, containing the thirteen papers read before the Conference, and a report of the discussion on each.

It would not be easy to over-estimate the debt which the Camera Club—and indeed, photographers generally—owe to the courteous Hon. Secretary, Mr. George Davison, and he was well backed up by his colleague, Mr. Spiers, and by Mr. Lyonel Clark (the Hon. Librarian), and the members of the committee.

Decidedly the Second Annual Conference of the Camera Club was a great success, and will cause "every *live* photographer" (Americanism this, is it not?) to look forward with pleasure to its repetition next year.

While in London I also attended a meeting of the "Parent Society" (as the Photographic Society of Great Britain is still called), at 5A, Pall Mall; and heard a paper by Mr. T. Dallmeyer (who is proving himself a worthy descendant of that splendid optician, his father,) on the so-called "Depth of Focus and Diffusion of Focus in Lenses." Although this famous society has not availed itself of its opportunities—has not marched with the age—yet I do not doubt that it will shortly awake to its duties, and will once more lead the van in matters photographic.

I cannot conclude my letter without a reference to the splendid exhibition of photographs now on view in the Walker Art Gallery, Liverpool, got together by the energy of the Liverpool Amateur Photographic Association. The catalogue is a little gem; is illustrated with reproductions of the prize pictures, and is sold for the microscopic amount of six cents! I imagine your readers would be able to obtain a copy by remitting that sum, plus postage, to the Hon. Secretary, Thos. S. Mayne, Fenwick Court, Liverpool. That they will not regret the investment is the opinion of TALBOT ARCHER.

THE HYDROQUINONE DEVELOPER.

DEAR BULLETIN:

In a contemporary journal, for April, I notice an article on Hydroquinone, signed by C. G. England, in which he advocates the use of the chemical in question, and gives a formula for same. I am no lover of out-and-out piracy (where it is discovered), but it is too palpable for me to sit quietly down and let it pass. In fact, upon reading it, a noise on my desk startled me, which, upon investigation, proved to be caused by my pen moving uneasily in its rack. I removed it, when an involuntary motion towards the inkstand followed, and it is the pen itself now recording what appears to be written by myself, but is, in fact, no creation of mine. In the BULLETIN of December 10, 1887, you will find an article on the subject, which Mr. England has probably seen (as all wide-awake photographers could not do without your valuable journal), and the formula therein given is reproduced as something new, he having changed the quantity of each article without varying the proportion. I quoted therein the formula as having been given me by Dr. Piffard, viz.:

Hydroquinone (Merck's)	100 grains.
Carbonate of potash	300 "
Sulphite of soda (crystals)	400 "
Water	20 ounces.

Mr. England has added fifty per cent. more of each, viz.:

Hydroquinone	150 grains.
Carbonate of potash	450 "
Sulphite of soda (crystals)	600 "
Water	30 ounces.

Whether Dr. Piffard invented it, or not, does not enter into the question, but he is the one who gave me the formula, and advised me to try it, which I did. I have had no reason for ceasing its use, and am now as delighted with hydroquinone, after having emerged from pyro, as I was with pyro after having used ferrous oxalate for years. Yours truly, INQUIRER.

[*From the Journal of the Franklin Institute.**]

THE JAPANESE MAGIC MIRROR.†

By Fred. E. Ives, *Philadelphia.*

The interesting apparatus, familiarly known by this name, is a circular, metallic hand-mirror, having figures in relief upon its back. The reflecting surface is highly polished, and reflects the face as well apparently as mirrors of silvered glass; but when it is used to reflect the direct rays of a powerful light upon a screen, the reflection shows, with a moderate degree of distinctness, the

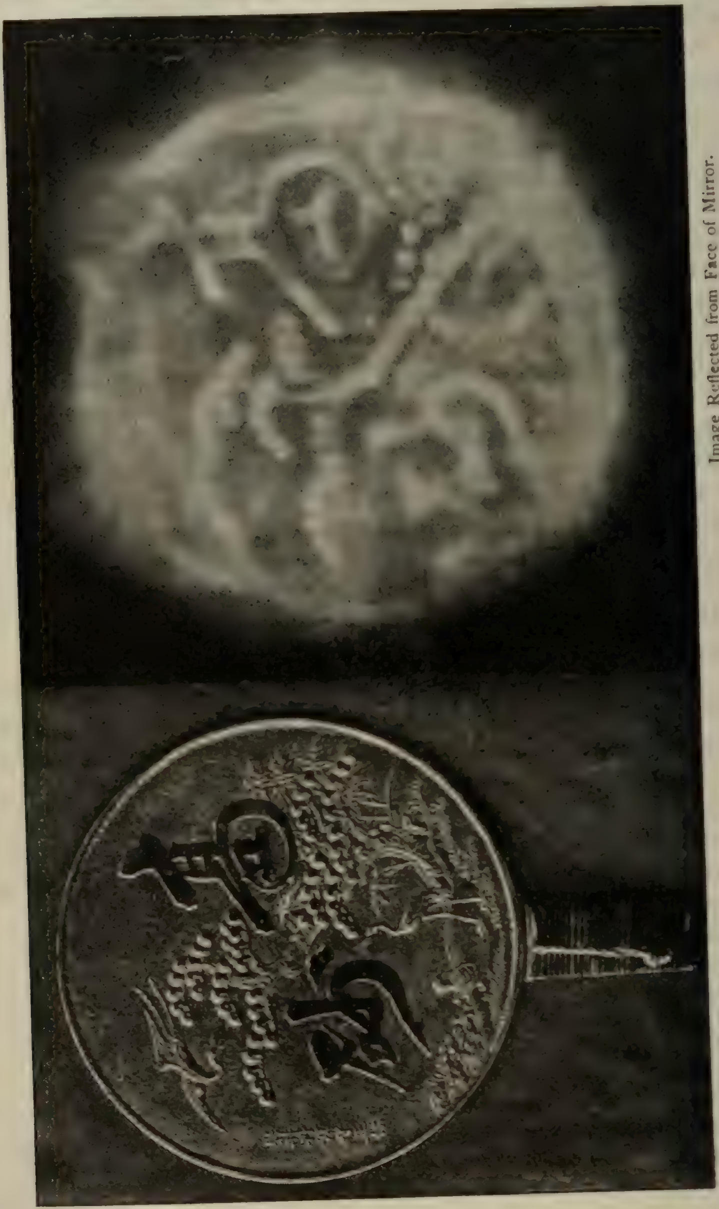

Image Reflected from Face of Mirror.

Back of Mirror.

THE JAPANESE MAGIC MIRROR.

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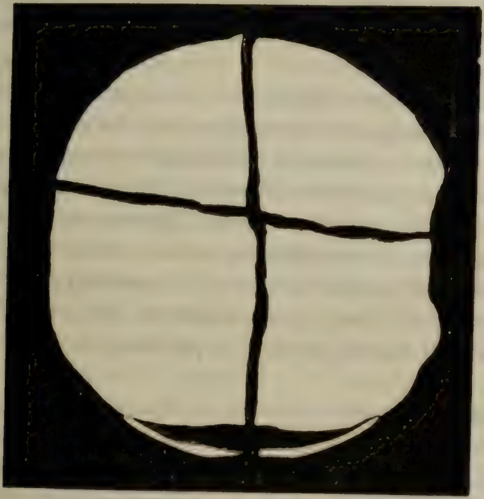
* Specially revised by the author for the Bulletin.

† The substance of remarks made at the Stated Meeting of the Institute, held November 16, 1887.

figures that are at the back of the mirror. It is a popular belief that the cause of this phenomenon is unknown, and that the Japanese metal workers must have exercised a marvelous degree of ingenuity in the production of such a mirror.

Having recently had an opportunity to examine and experiment with one of these mirrors, I observed that it was slightly convex, and that when it was placed several feet from the eye, objects reflected in it appeared irregularly distorted, as if seen through a bad piece of common window glass. The conclusion arrived at was that there were irregularities in the convexity of the mirror quite sufficient to account for the striking irregular reflection of the sun's rays which is observed. It would be sufficient, in order to reproduce the figures at the back of the mirror, to have its face very slightly less convex on those parts, and such a condition may readily have been produced by means incidental to the quick and economical production of a metallic hand-mirror.

The mirror is thin, the metal very elastic, and the general form of the back is slightly convex, measured by the top of the ornamental relief figures and rim. It is evident that if, in the operation of grinding the face of the mirror, it was held against the grinding surface by a flat support at the back, the pressure would flatten it until the ornamental relief figures rested upon the support, and on those parts the mirror would offer a positive resistance, and be ground away rapidly; but the thin parts between the relief figures having no direct support, would be sprung back by the grinding pressure, and would, therefore, be ground away less rapidly. On removal of pressure, the back of the mirror would regain its original form, but the face, ground away irregularly, and most where the relief at the back was greatest, would have a slight but irregular convexity greatest on the thin parts between the relief figures.



Reflection of Window Bars.

The Japanese mirror appears to have exactly such a surface as would be produced in this manner. And if so, we should expect that upon springing the mirror flat by pressure, the polished surface would become plane again, and the figures vanish from the reflection. This experiment has been tried, the pressure having been applied by means of a heavy piece of plate glass, with the result anticipated. A photograph of the reflection has also been compared with the back of the mirror, without discovering any peculiarities that seem to me inconsistent with this explanation. (See page 200.)

Sir David Brewster made the first recorded attempt to explain the action of the Japanese mirror, suggesting that the design on the back was reproduced on the face by careful engraving, so lightly done that the figures traced are invisible after the mirror is highly polished, and can be made apparent only by using the mirror to cast a reflection of the direct rays of a powerful light.

Another and favorite theory is that the differences in the surface of the mirror are molecular, the metal having been rendered more dense, either upon or between the relief figures, by hammering, or by a peculiar method of casting, and that the denser parts reflect either more or less light than the rest. An English brass finisher claims that by stamping brass three times with the same die, and grinding and polishing after each stamping, a molecular difference is established, which produces this result. Even if this be true (which I doubt) such an explanation would not apply to the Japanese mirror, which gives an irregularly distorted reflection, as well as an irregularly lighted one. Irregular distortion cannot occur unless the reflecting surface is irregular, because it is a law of nature that the angle of reflection of a ray of light is always equal to the angle of incidence.

One writer, seldom quoted, did go so far as to attribute the irregularity of the reflection to irregularities in the convexity of the mirror, but supposed those irregularities to be due to a process of stamping, hammering or chiseling. Mr. James Prinseps, in an article in the *Journal of the Asiatic Society* vol. 1, p. 242, says: "The thin parts or tympanum of the Japanese mirror are slightly convex with reference to the rest of the reflecting surface, which may have been caused either by the ornamental work being stamped or partially carved with the hammer and chisel on its back, or, what is more probable, that part of this metal was by this stamping rendered harder, so that in polishing it, it was not worn away to the same extent."

The mirror we have here is 9 inches in diameter, $\frac{1}{2}$ of an inch thick at the rim, and from $\frac{1}{2}$ to $\frac{2}{3}$ as thick between the relief figures. It appears to have been cast and not stamped, hammered or chiseled. It is my belief that it was produced in the simplest manner possible, by casting, grinding and polishing. It is at least certain that such a result, as we have here, must follow such a procedure as I have described, and for the reasons I have stated. Engraving, stamping, hammering and chiseling would be alike superfluous. It follows, that the magical feature of the first Japanese mirror may not have been, and probably was not, produced intentionally, and that our former estimate of the Japanese metal workers' ingenuity may be taken *cum grano salis*.

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PHOTO-MICROGRAPHY AND THE MAKING OF LANTERN SLIDES.

BY WILLIAM H. WALMSLEY.

[Read before the Society of Amateur Photographers of New York at their special meeting of March 21, 1888.

I SHALL crave your attention this evening but a short time, to a few remarks on the announced subject matter of my paper (Photo-Micrography and the Making of Lantern Slides), under the belief that you will be more interested in seeing the results of work in that direction upon the screen, than in listening to a long-winded description of the methods employed in its accomplishment. A few details however may not be uninteresting to those inclined to indulge in this branch of photography.

When I first had the honor of addressing this society on the same subject a few years since, the names of those whom I knew to be engaged in this class of work could be counted on the fingers of one's hand; now they are numbered by hundreds all over the country, and I cannot help feeling elated by the thought that my persistent, though humble efforts to interest others in a direction that was peculiarly fascinating to myself, have been the means of bringing many workers into the ranks. Viewed from no higher plane than that of recreation or amusement, photo-micrography has large claims to our respectful consideration; but as an educator—as a means of disseminating knowledge of the world about us, invisible to the unaided eye—its mission is of a vastly wider and higher nature. Comparatively few can ever hope to be the possessors of a really good microscope, or to become proficient in its manipulation, and in the preparation of objects for examination; but a single practiced observer can make transparencies direct from these preparations, such as no artist, however skillful, can rival, and exhibit them upon the screen to an audience of many hundred observers at once. The importance of this means of education can scarcely be overestimated, and is generally acknowedged by educators everywhere. The outfit of no school or college of any importance is now considered complete unless it includes an optical lantern; and teachers of botany, animal and vegetable histology and other branches of science use it constantly in illustrating their lectures on these subjects. Until very recently most of the slides thus shown were copies of drawings from text-books; many of them very beautiful in their way, but all more or less diagramatic and untruthful. But thanks to the general dissemination of photographic knowledge, due to the introduction of gelatine dry plates, correct and beautiful facsimilies of the objects, made by the unerring pencil of light itself, are rapidly replacing these inaccurate drawings. Any one possessing a fair knowledge of photographic manipulations and a microscope of the cheapest construction, may prepare for himself such lantern slides from microscopic objects, as no draughtsman, however skillful, may hope to rival. Whilst specially constructed microscopes and cameras are highly desirable and very convenient, they are not absolutely necessary. Very ordinary tools in the hands of earnest and persistent workers will accomplish much. Given a microscope of any description, a camera ditto, a coal-oil lamp as the source of light, an object so prepared that the light may pass through it, and a gelatine plate, with the proper chemicals, and we have a completed list of the necessary tools for our work. Opaque objects may also be photographed by the same light with low powers, and a slide so made will be shown to-night; but, as a rule, transparent ones are better suited to the work and give more satisfactory results.

The most simple method of making a photo-micrograph is undoubtedly to slip a small camera over the eye-piece, focus the image upon the ground glass, insert a plate in the holder and make an exposure in the ordinary manner. If the camera be supported by a suitable frame-work, so that the bellows can be extended, quite a range of magnifying powers may be obtained with a single objective. My first work was done with the so-called "pocket camera" of Walker, since more widely known to fame in connection with the Eastman-Walker roll-holder. This camera, as many of you doubtless will remember, consisted of a small mahogany box without bellows, and carried a plate 2¾ x 3¼ inches. The focusing was effected by sliding the tube carrying the lens, in an outer one. Upon removing the inner tube and lens, the outer one fitted exactly over the eye-piece of the microscope, and a small but brilliant image of the object under examination was visible upon the ground glass. With this primitive apparatus I made many quite presentable negatives, and retain an affectionate remembrance thereof as having been the means of leading me into the very pleasant paths of photomicrography. Dr. Mercer, of Chicago, subsequently improved upon this form of apparatus by devising the camera which bears his name. This camera is attached to a short brass tube which can be slipped into the body of the microscope or placed over the eye-piece. The plate-holder and focusing screen are in one piece, sliding in grooves at the back of camera, so as to be instantly interchangeable. The value of this little contrivance, in the facility it gives the observer of recording in a moment any object under examination, is very great. Its scope of usefulness, however, is quite limited; the plates used are very small, and having no bellows, the magnifying powers can only be be varied by change of objectives.

It is obviously impossible, in the limited time at our disposal, to even refer to the almost innumerable forms of cameras for this purpose that have been devised at home and abroad. Almost every worker has had his own way of accomplishing his end, and it really matters little by what road he travels, so that he "gets there"; if I may be allowed to use the familiar American expression in this connection. I therefore come at once to my own apparatus, which has done good work, not only in my hands, but those of many others; showing thereby, I think, that it is adapted to the work for which it was designed. As at first constructed, the camera consisted of a square box carrying plates 4¼ x 5½, vertically or horizontally, and also, by means of inside kits, others, 3¼ x 4¼. The bellows was double, with a central support, and extended about thirty inches upon continuous V-shaped ways, with a simple arrangement for clamping firmly at any point of extension. A cone-shaped tube in the front received the body of the microscope, and any extraneous rays of light were prevented from entering the space between the two by wrapping a strip of black cloth or cotton velvet about them. The focusing was effected by a fine cord passing around the milled head on the microscope which controls the fine adjustment, and thence through hook eyes to the rear of the camera, where it was kept taut by a couple of small leaden weights attached to its two ends. A slight pull upon the cord sufficed to control the adjustment most delicately with the highest powers; and I have had no desire or occasion to change this mode of focusing as yet. The body of the microscope was inclined to a horizontal position, and thus introduced into the cone-shaped tube of the camera, with or without eye-piece as desired. In my own practice none is used; in fact, my special microscope has no eye-piece, excepting when used for table work. The light was furnished by a coal-oil lamp with duplex burners, which were always placed at an angle to the plane of the stage, thus utilizing the whole depth of the flames without the annoyance caused by the dark space between the two wicks, if the latter are placed at right angles to the stage. I used this contrivance for some years most satisfactorily, without regarding it as being of any commercial value, but one of your shrewd business men, Mr. McAllister, some time since, devised an admirable lamp, embracing the same feature, for which he obtained a patent, and I am now using one of them with the greatest satisfaction. So much for not being a patentee.

My present form of camera embraces the essential features of the first, with many useful improvements. Instead of a solid cone front, the latter is now made in the form of a cone bellows, so attached to the camera as to slide to a considerable extent, vertically or horizontally, for accurate centering. This may be entirely removed and replaced by an ordinary front board, to which a rectilinear lens can be fitted, thus converting the box into a copying camera. The bellows are in two sections, with a central box or division in which a lens can be placed for making lantern slides by enlarging or reducing from a negative; the latter being held in position on the front of the camera by rabbeted kits, the bellows front being removed for this purpose. The lens is inserted and manipulated through a door placed in the side of this central box; and the instrument when so used becomes an enlarging, reducing and copying camera in miniature. The plate holder is single, carrying but one plate, so that by removing the slide and back, only the frame-work remains. In this condition it is used for the final focusing, as follows: The object having been adjusted, centered, and roughly focused upon the ground-glass screen, the latter is removed and the skeleton plate holder made to take its place. In the latter, a piece of plate-glass with one surface delicately ruled in squares by a writing diamond is placed; the ruled side toward the object. A positive eye-piece, or Darlot focusing glass, accurately adjusted to its thickness, is now placed against the back of the plate-glass, the eye applied thereto and the focusing completed with the utmost exactness.

With high powers, this form of focusing screen (for which I am indebted to my friend, Mr. T. Charters White, of London) is simply perfect. But when using medium or low powers, I greatly prefer the following, which I have employed for several years: An evenly coated gelatine plate of proper size to fit the plate-holder, is exposed to a flash of white light, and developed until it presents an appearance of smokiness or fog, but without being allowed to acquire any considerable degree of density. It is then to be fixed as usual, washed thoroughly and immersed in a mercurial bath to whiten. Upon being dried after a final washing, it will present a beautifully opalescent and translucent surface without grain, upon which the minutest details of any microscopic object on the stage of the microscope will be clearly defined, and can be accurately focused in the same manner as before described. Since this focusing screen occupies the identical position in the holder to be afterwards filled by the sensitive plate, it follows that the two must register exactly alike, and the resultant negative be as sharply defined as the image seen when focusing.

(*To be continued.*)

THE APPLICATION OF PHOTOGRAPHY TO MEDICINE AND ALLIED SCIENCE.

BY DR. D. G. THOMSON.

[Read before the Camera Club Conference.]

Among the many sciences which have benefited by the uses and application of photography, none, with the doubtful exception of astronomy, has profited more than the art science of medicine.

Although photography has been in use for about fifty years, it is only within the last ten that men have seen the many valuable uses the younger art-science may be put to, to aid the much more ancient art-science of medicine, this being probably due to the great advances made in our knowledge of photo-mechanical printing methods and the introduction of gelatino-bromide dry plates. Without further preamble I will at once describe in what particulars photography is most useful in medical science, not necessarily in the order of their importance, but as they occur to my mind.

Firstly, in the study of anatomy, the basis of all medical study, photography renders valuable help by the accurate representations it can give of the organs of the body and their relative position to one another. Drawings vary in truthful delineation, according to the skill of the artist and his knowledge of medicine, and are further handicapped by having to be done hurriedly; not so in photography. The modern methods of freezing whole or parts of bodies, making sections through them and photographing with orthochromatic precautions, these sections give absolutely correct views of those parts obtainable in no other way. Freezing is resorted to as certain of the viscera are flaccid, and cannot be examined without altering their shape and position. This is notably the case in frozen sections of women dying enceinte, photographs of which illustrate modern text-books on obstetrics.

Quite recently Dr. Arthur Thomson has been employing photography very successfully in delineating the facial angle and contours of the skull of various races; and he has done this not merely by photographing a skull in profile of one race, and comparing it with a skull in another race, but he has ransacked museums, and with great skill and labor produced a valuable typical "composite" of very many skulls of each race, and thus arrived at much more correct and average types of the crania of the various ethnological varieties of man.

I could enlarge on the advantages anatomy has derived from photography, but must pass on to another branch of medical study—from the dry bones of anatomy to the living processes of physiology.

The functions and mechanism of the eye, from a photographic point of view, have been brought before the notice of many of you by a fellow member of the Camera Club (Dr. Lindsay Johnstone), in an article published in the "Club Proceedings," at the end of which he goes so far as to say: "The perception of form and color is a vast subject, and although we are only on the threshold of the problem, yet daily facts are pouring in, and we look to the teachings of photography more than to any other science to find an answer to these two mighty problems—What is sight? What is perception of color?"

Then, in giving us accurate drawings of the vocal cords in the larynx or voice-box, photography has rendered aid to the physiologists who investigate and describe the mechanism of that wonderful musical instrument, the human larynx. This has been done by Brown and Behnke, who photographed the images thrown on the laryngoscopic mirror produced by the various movements of the vocal cords or strings.

Similarly, the fundus, or back of the eye, has been photographed through the pupil, and reliable pictures taken of normal and abnormal conditions of the retina.

In physiology, however, the greatest practical use photography has been put to is in the study of locomotion. The various movements performed in the acts of walking, running, and leaping, both in man and in the horse, and, also, more recently, in the flight of birds, have been studied by means of instantaneous photographs, taken at the rate of ten per second.

Marey, in France, and Muybridge, in England, who are in the van of this method of research, obtain photo-chronographic pictures which show not only the limb of a mammal, or the wing of a bird in the various positions it assumes during flight, but also its positions in space and time. The images thus obtained can be placed in the zoetrope, and by thus recomposing them the impression of a mammal running or a bird flying is obtained.

Marey goes so far as to hope that by photo-chronography we may arrive at a true knowledge of the physical condition of flight, and that possibly then, and then only, will flying-machines be constructed with some probability of success. This would, indeed, be a triumph for Photography.

I would refer my hearers to a very interesting account of the photo-chronography of the flight of birds in a recent number of *Nature*, by Professor Marey, where he also states that he intends to make extended photographic studies of the flight of birds from the top of the Eiffel Tower now being erected for the next Paris Exhibition.

In medicine and surgery, the uses of photography consist mainly in the accurate portrayal of various diseases. In surgery, photography is extensively used to illustrate deformities, injuries, and tumors in living subjects; and many hospitals have photographic appliances and dark-rooms for the rapid and accurate pictorial delineation of those cases. I remember a dozen years ago, as a student, seeing artists drawing pictures of deformities and tumors in the wards, taking hours to do it, often to the great discomfort of the patient, and with but sorry results; now either a professional, or skilled amateur gets infinitely better and more reliable results in a few seconds, to the great convenience of the patient.

In medicine, skin diseases, insantity, and the study of bacteriology are in the departments in which photography is of the greatest and most useful service. To take the first named, several atlases of skin diseases have been prepared from photographs. Those however have the defect of being printed from what would be called technically good negatives, whereas, as color is all important, they would be much better if fully-exposed very thin negatives were taken, printed from lightly on rough paper, and then colored. Then in insanity, the plan of photographing patients on admission to the asylum is pursued in many institutions for the insane, not altogether as in prisons for purposes of identification in the event of escape, but as constituting the best description of the general appearance of the patient, as to physiognomy and posture possible. Those photos are pasted in the case-books, and, with others taken during the course or termination of the attack of insanity, when reason has resumed its sway over the play of the features and the expression of the emotions, form most valuable accessories to the history of the case. Asylum photography, of which I have had considerable experience, having photographed over a thousand lunatics, often taxes all the patience and resources of the operator. Talk about the perpetual motion of a restless child, it is nothing to an acutely maniacal sitter. The usual resources of the professional portraitist to arrest a child's attention while the pneumatic release is being manipulated, such as the unexpected performance of a musical box, or a suddenly exhibited caged bird, would only excite such a sitter to make tracks for the photographer; and I am always ready when I see a sudden increase in the size of the image on the ground glass, to shoulder my tripod and camera, and seek the seclusion of the dark-room, and leave my sitter to calm himself with a little argument with the attendant.

The many dodges pursued by the prison photographers are of great use—*e.g.*, when a patient refuses to sit, to pose and pretend to photograph the attendant, whilst really doing the objector.

One patient, I remember, I could never induce to enter the studio, and I need not tell you that moral suasion is the only system in vogue nowadays in managing the insane; so I took my camera and stand one day into the garden where he was exercising, to have a shot at him; but, of course, when all was ready he espied me, and I had just time to save my apparatus, by putting it over a hedge, when he was upon me, and was rather cross at not having succeeded in putting his foot through the camera. I may add that a few days later, on my promising to forward copies of his photo to each member of the royal family and House of Commons, he condescended to sit. However, even those difficulties will be completely overcome when detective cameras are perfected. Detective cameras, although still far from perfect, have been wonderfully improved of late, and will doubtless prove of much use in medical photography.

Composite photography promised at one time to be much employed in photographing the subjects of certain diseases. Mr. Francis Galton took up this subject with his usual thoroughness and skill, and attempted to obtain what he considered a type or face to be met with in those suffering from consumption. It is doubtful, however, if there is anything of real scientific value in such types. Consumption, as we know, affects people of all ages, nationalities, and bodily constitutions; and a type, if taken from a large enough number of cases, would probably be indistinguishable from the type of face in the healthy. Not so in the ethnological work on skulls, by Dr. Arthur Thomson, above-mentioned, where composite photography, in spite of the ridicule cast upon it by some writers, appears to be of real scientific value.

Now, a few words on the uses of photography in bacteriology. Most of you know that the modern theory of many fevers and epidemic diseases is that they are due to the entry into the system of bacteria—exceedingly minute organized bodies occupying a place in nature on the border-land division of plants and animals. Moreover, it is asserted certain specified bacteria or bacilli produce certain specified diseases, as for example, the tubercle bacilli, which produce only tuberculosis or consumption. The bacilli of typhoid fever, the bacilli of fowl cholera, which M. Pasteur has just sent to Australia to exterminate the rabbits. These organisms are all microscopic, are exceedingly alike, and, therefore, require to be very accurately described and delineated; micro-photography is much employed to obtain correct drawings of them. I need not remind you of the life-long work and productive labor of Dr. Maddox in micro-photography; latterly Procella and Mr. Briginshaw have also devised and improved micro-photographic methods.

I have said nothing of the valuable aid photography has rendered to medicine, or rather its teaching, by improved photo-mechanical text-book illustration. We now see fewer illustrations in them of doubtful accuracy, and more photographic delineations of cases which always carry conviction with them. The photographs, for example, in Ross's diseases of the nervous system could not be approached in excellence by wood-cuts taken from drawings.

Then photographic process *e. g.* the ferro-prussiate process, could be applied to the making and copying of diagrams for teaching purposes. However, in the short space allotted to me, I have tried to indicate the different ways in which medicine is deeply indebted to photography in recent times, and I have made it short, as any amplification would lead me into medical details not of general interest at a photographic conference. In conclusion, I would take this opportunity of publicly urging the advisability of all medical institutions being furnished with a photographic department, or at least a well-equipped dark-room.

SOME OF THE APPLICATIONS OF PHOTOGRAPHY TO SCIENTIFIC PURPOSES.

BY H. TRUEMAN WOOD, M. A.

[Read before the Camera Club Conference.]

I DO not know that there is much need, in addressing such an audience as this, to lay stress on the important part now taken by photography as an instrument of scientific research; but I do think that our annual Conference should not be allowed to pass without stock being taken of the present position of photography as the handmaid of science. I think also that too many photographers are content to regard photography merely as a means of making pictures. With professionals this would be excusable, but amateurs ought to make it their first object to advance the science to which they are devoted, and to promote its application to as many diverse purposes as possible, thereby increasing its usefulness.

All that I propose to do on the present occasion is to summarize quite briefly, so far as I have been able to collect them, the various scientific applications which have yet been made of photography, and to indicate the special advantages which can be obtained by its use.

First of all, photography is an absolutely unprejudiced observer; it has no personal equation. The sensitive plate records, with absolute fidelity, the image thrown upon it. We may be mistaken in our interpretation of the record, or in rendering it visible we may not treat it so as to get the plainest and best results, but that is our fault. And we can, if we like, falsify the record, but that is our dishonesty. Therefore, as a scientific witness of form, when it is available, photography is invaluable.

The next, and perhaps the most valuable characteristic of photography, or at least the one by which the most remarkable results have been attained, in its application to astronomy, is in the power possessed by the sensitive surface of storing up feeble impressions of light, so that an image is produced by the long-continued impact of vibrations too feeble to have any effect until they have been allowed to impinge upon the plate for a considerable time.

On the other hand, the light rays, if of sufficient energy, can, as we know, produce their due effect in a time which, to human appreciation, seems infinitely small. Thus, photography can observe and record the successive positions of a rapidly moving object; whereas, to the eye, the successive movements are, by the persistence of human vision, blended into a sort of general average, as in the case of a galloping horse; or, lost in confusion, as in that of a rapidly spinning wheel.

Again, the photographic plate may be said to have a greater range of vision than the eye. It is affected by rays to which the eye is quite insensitive, and thus, by its aid, we can take cognizance of and observe rays beyond the limits of the visible spectrum, of the highest and the lowest refrangibility.

Then the photographic lens is, of course, indifferent as to the amount of detail which is set before it. Thus, a large extent of surface can be observed, and its details recorded at once. In a short series of exposures, the lines of a spectrum, which it would take months or years to map by hand, are recorded with an accuracy the hand could never hope for. In mapping the heavens, the exposure of a single plate may give better and more trustworthy results than six months' such toil as that to which the two Herschels devoted years of their lives. And in a few moments there can be accumulated data which may suffice for the examination of years. Thus, the few minutes of an eclipse may provide work for months.

Probably the most important services which have been rendered by photography to science are in the domains of astronomy. Very early in the history of photography, attempts were made to photograph the moon by Professor Draper, and later on, in 1852, photographs of the moon which have hardly yet been surpassed were obtained by Mr. Warren De La Rue. For some time, photographs have been regularly taken of the sun's surface; indeed, of recent years, a photograph of the sun for every day of the year has been obained from some part or other of the earth. The exposure for them is made by a very narrow slit, passing rapidly across the field of view. The value of photography in the short period of time available for observation during solar eclipses is well known since the eclipse of July 18, 1860. The most recent achievements, however, have been in connection with sidereal photography. This may be said to have been commenced by Dr. Gill at the Cape of Good Hope Observatory in 1882, and immediately after the publication of his results astronomers perceived the value of photography for star-charting. This work, an undertaking of enormous and lengthened toil when it has to be done by eye observation, will certainly in future always be carried out by photography alone. You are aware that Messrs. Hall & Prosper Henry have been for many years working at this important subject, and they were getting into considerable difficulties in carrying it out, when the results obtained by Dr. Gill determined them to employ photography. In 1886 it was proposed that an International Congress should be formed to carry out a survey of the heavens. The first meeting of this congress was held in April, 1887, and by it arrangements were made for charting more than twenty million stars. It is expected that the charting of stars down to the 14th magnitude will be accomplished in about five years. Ten thousand plates will be used, each exposed for a quarter of an hour; while there will also be a set of short-exposure plates to deal with the brighter stars, which will, of course, be over-exposed in the first set.

No reference to sidereal photography could be made without allusion to Mr. Common's well-known photograph of the nebula in Orion, taken in 1883. Of this photograph the director of the Lick Observatory says that every important result reached by twenty-four years' study of the nebula in the great Washington equatorial, was obtained by Mr. Common's photograph, which was exposed only for forty minutes; while Mr. Norman Lockyer has expressed the opinion that this photograph is one of the greatest achievements of modern astronomy; of a value greater than that of all the eye observations made during the past two-and-a-half centuries.

As regards astronomical spectroscopy, here, of course, photography has had it all its own way. Dr. Huggins was pioneer in the work of photographing star spectra in this country, and he has been followed by Dr. Henry Draper and Professor Pickering in America. By means of spectroscopic negatives, not only has much information been obtained as to the constitution of the stars, but we have also learned much about their motion. The latest published work in this direction is that by Mr. Norman Lockyer, who has applied Mr. Francis Galton's system of composite photography to the spectroscope, and has, by the combination of negatives from portions of meteoric bodies raised to incandescence, obtained spectra identical with certain stellar spectra, and has thence deduced the conclusion that the material of the stars and of the meteoric bodies found upon the earth itself are identical.

Meteorologists have made use of photography in various ways. Its most simple application has been its employment in self-recording instruments. The mercurial column of a barometer or a thermometer has been caused to intercept the light falling on a band of sensitive paper passing behind the instrument at a known rate. A curve is thus traced which accurately represents the variations of the instrument from hour to hour. Or a ray of light is reflected by a mirror on a similar band, the mirror being caused to move by the instrument whose variations it is desired to record. Or to measure directly the amount of solar radiation, a ray of light passing through a small aperture in a closed cylindrical chamber, and falling on sensitive paper lining the inner surface of the chamber, traces, as the sun moves, a line, whose varying intensity is a measure of the variation of the solar light. Such photographic records have now for a considerable time been employed at Greenwich and at other observatories. The photographic observations of cloud forms and distances made in this country by Mr. Whipple, and in France by M. Jansen have also, I understand, proved valuable.

Recent photographs of lightning have quite disposed of our old friend the "forked" or zigzag flash, which will doubtless, for the future, only appear in the pictures of artists who are superior to the realities of nature, along with pink rainbows or rainbows with the red inside the arc. They also serve to show the similarity of the lightning-flash to the spark from a powerful induction machine, photographs of the two being closely alike.

In the domains of chemistry and physics, the best photographic work has been done by the camera when allied with the spectroscope. Without the aid of photography, comparatively few results would have been obtained by the use of that marvelous instrument. Indeed, if the spectroscope is ever to attain the position which has been claimed for it as an instrument for practical chemical analysis, it will certainly be by the aid of photography; and there is every reason to believe that, thanks mainly to the labors of our distinguished chairman and of Prof. Hartley, amongst others, the practical application of the spectroscope for purposes of analysis has been rendered possible. Not only can useful practical analysis of metallic subtances be made by the spectroscope, but by photographing their absorption spectra, even organic substances have been caused to give useful results. It has been proposed—I am not aware with what success—to employ photography to record sound, by photographing a jet of water interrupted by the action of sonorous vibrations on a diaphragm. Some day, perhap, photography will give us a standard of light; perhaps when we can ascertain the amount of silver reduced by a definite amount of light acting on a measured surface of a known sensitive compound.

In the biological sciences the applications of photography have been many and various. I need say nothing about its services to medicine, as this subject has been specially treated by Dr. Thomson. So, I will only refer to the facts that, as I believe, photography has been of service in recording the appearance caused by various diseases, and that photographs have been successfully taken of various portions of the human body—such as the retina and the interior of the throat—presenting special and great difficulties.

Anthropology finds a valuable aid in photography. Year by year one savage race after another is disappearing from the earth, or altering its ancient habits and mode of life. It is only by photography that a trustworthy record can be obtained of these vanishing types. Whether any useful result has been, or will be, obtained by means of Mr. Galton's well-known process of composite photography, I cannot say. At all events, it will be a pity if so singularly ingenious a device cannot be made to serve some useful purpose.

In the study of natural history probably the most important work done by photography lies in the direction of photo-micrography—a branch of microscopic work which has made great progress of late, and will doubtless make more. I believe that a considerable step forward has been made—at all events, as regards the higher powers—by the use of objectives of the glass lately introduced by Professor Abbé. Nor must we forget the most interesting work commenced by Mr. Muybridge, and continued by M. Marey, in photographing animals in motion. The researches of these two gentlement have done more to throw light on the actual phenomena of animal movement than the investigations of all preceding naturalists put together.

The value of photography in geographical science is now so well admitted that an explorer would almost as soon think of starting without a camera as without a rifle. Consider how valuable are such photographs as those of the wonderful terraces which existed in New Zealand till two years ago. What other record have we of what travelers tell us was once the most marvelous natural phenomenon in the world? How useful, too, are such photographs as those of the Arctic expeditions, how interesting the pictures we now get after every new journey into unexplored or little-known lands!

Such are some, at all events, of the services which photography has rendered to science. I have been content to enumerate rather than to describe them. I have confined myself to scientific applications alone, leaving aside those of a technical or legal character. I cannot hope that even the enumeration has any pretense to completeness. Perhaps some of the omissions may be supplied in the discussion.

DISCUSSION.

Mr. A. Pringle said he had listened to Dr. Thomson's paper with the greatest interest. He had seen a most interesting collection of portraits of lunatics taken at the hospital, both when the patients were in a comparatively sane state, and also when in a fit of hystero-epilepsy. He considered the results most remarkable. Dr. Thomson had had experience in photographing lunatics in the asylum, but the speaker had also done a good deal in the way of photographing lunatics at large—he meant he had frequently had to take the portraits of brother amateur photographers.

Mr. Jerome Harrison thought the paper would show amateurs the importance that photography had now assumed, and hoped that their energy would be devoted to the furtherance of their art in the ways pointed out by Mr. Wood. He thought that there should be a State photographer, who should be specially charged with obtaining authentic portraits of our great men. The time must come when the present era will be history, and authentic photographic records would be invaluable. He thought also that, in the same way that we got our thermometers tested at Kew, we ought to be able to have our lenses reliably tested, and a warranty given with them.

Dr. Thomson asked Mr. Wood for further explanation *re* spectrum analysis of organic bodies—Mr. Wood referred him to the historical paper of Dr. Hartley.

The chairman, in closing the discussion, said that it was necessary, in a conference like the present one, that the chairman should be a veritable walking encyclopædia. With respect to Dr. Thomson's remarks about sections, he thought the most beautiful specimens of this work he had ever seen were Dr. Ferrier's sections of brains, which had been described and photographed in a memorable paper in the "Phil. Trans." He hoped that Dr. Johnson would arrive at the question of sight by photography. He considered photographing the back of the eye a most difficult proceeding, and he claimed that he, in connection with Mr. Barton, were the first to attempt it. He should liked to have heard from Dr. Thomson more of the dodges he had used to photograph his prisoners; it would make an interesting paper of itself. He thought Mr. Wood had been rather hard on the art side of the question, for it was undeniable that photographs from an art point of view conferred a great deal of pleasure on the many. He could quite confirm his remarks about the work created during the few minutes of an eclipse. He could tell the meeting that the eclipse expedition to the West Indies, two years ago, had not yet laid the result of their labors before the Royal Society. He thought Mr. Harrison's idea of a State photographer a most excellent one. He would remark that Kew was not a Government station, but under the care of the Royal Society. He could not say whether they would be open to test lenses. He would also say that, as a matter of fact, the South Kensington Museum was making a collection of photographs of celebrities. In conclusion, he would ask the meeting to express their thanks to the two authors for their very interesting papers.

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SINGLE LENSES CORRECTED FOR ARCHITECTURE.

BY J. TRAILL TAYLOR.*

[A communication to the Camera Club Conference.]

As most of you are aware, I discoursed before the Camera Club over a year ago on the subject of "Distortion, Mainly by Lenses." My remarks at present will partake of a character largely supplementary to what was then said concerning single landscape objectives, and a method, then only hinted at, by which their one fault might be cured—the fault referred to being the distortion they produced, and which rendered them inapplicable for the direct production of architecture or for copying maps or plans. I say the "direct production," for no matter how distorted the original negative may be, it is easy to reproduce it under contrary circumstances of distortion so as to give a result that is orthographic.

By a single landscape lens I must be held as meaning one in which there are only two reflecting surfaces, these being the exteriors. About the image formed by a lens of this nature there is a high degree of pluck and vigor, arising from there being no air spaces in its interior, and therefore fewer of those reflections which are a concomitant of every lens, but are greatly intensified when there are reflecting surfaces.

The distortion to which I am to refer in what is here to be said is that of curvature of the margins, and is caused by the oblique rays not passing straight on to the focus, as do in a sense the central ones, but becoming deflected in an increasing ratio as they are transmitted near the margin. With landscape lenses the margin of the picture is formed by the margin of the lens; hence the smaller the diameter of the lens, the less will be the distortion, as there will be less compression of the marginal objects. This compression is of minor consequence in a landscape, but in an architectural subject covering the full size of the plate it has the effect of causing straight lines to be curved; therefore, for copying a map or plan the lens is unsuitable. Hence compound combinations in which the defects of one lens are balanced by contrary defects in the other, the results being rectilinearity. I here submit an illustration of curvilinear distortion.

Over thirty years ago the attention of opticians, both amateur and professional, was given to the best means for effecting a cure of distortion; but of all those no one, so far as I am aware, wrought so assiduously in this direction as James T. Goddard. A professional optician, he was also a devoted experimentalist, and introduced many different forms of lenses, which, owing to his commercial resources being terribly limited, caused by his deficiency in commercial tact, were not extensively manufactured or widely known, the more especially as in those days manufacturing opticians appeared to tacitly recognize a species of proprietary interest or copyright in the productions of contemporary producers.

I now introduce a paragraph from my previous discourse to this Club, and I do so as the text for the remaining part of what I have to say. "With a single or distorting lens it is not only possible, but easy, to obtain rectilinear or orthographic photographs. Select two simple lenses, such as strong spectacle glasses, of a meniscus or periscopic form, one being a positive and the other a negative or concave, selected of such strength that one neutralizes the other, thus forming a combination nearly equal to a piece of plain glass, and place them just in front of the diaphragm. The lens thus becomes rectilinear. Those of you who prefer the single landscape lens, and may at some time or other be confronted with an architectural subject which fills the plate, and is thus projected under distorting conditions, may become quite independent of adverse fate by invoking the aid of this corrector, which may be carried in the pocket ready for use when required."

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* We are indebted to our good friend Mr. J. Traill Taylor for corrected advance sheets of this paper.

Let us now hark back a little, before I elucidate what is only faintly hinted at in this passage. And, first, let me say that the condition under which rectilinearity is obtained is this—that every ray which enters a lens shall emerge from it in a direction parallel to that of its entry. Goddard, in his compound landscape lens, shows that he had discovered that by associating with the principal achromatic lens a convex and a concave of such relative power as to neutralize each other, while the focus was not altered yet was a cure of distortion effected. This discovery and that of his double periscopic landscape lens dates from January, 1859. This latter lens, the double periscopic, although only a few were sold and now almost forgotten, has in it the element of goodness; a fact evinced from the circumstance that an eminent optician to whom its existence was evidently unknown has, within the past few weeks, introduced and obtained protection for one similar.

I here submit two untrimmed large round periscopic spectacle glasses, one being a positive of eight inches focus, the focus of the other being similar, so that when placed together their power is *nil*, or practically so. By separating them to the extent of half an inch or an inch, with the convex side of the diminishing lens next to the concave side of the positive or magnifying one, it is at once perceived when looking at any object through them obliquely, that a great degree of displacement of such object takes place; and when this combination is placed at the position of the diaphagm of the lens, the oblique rays are transmitted to the objective with such a degree of increasing expansion as to overcome or neutralize the contraction or compression that would otherwise take place in the absence of such an expedient.

The distance apart of the two correcting lenses should be determined by trial, for it is not arbitrary except for any one objective. It is desirable that they be mounted in the following manner:—Procure a piece of tube about an inch long, and of such diameter as to fit into the hood of the lens. Into the end of this is set the concave lens. Into the outer end fit the other lens, under such conditions as to provide for a slight movement, so as to increase or diminsh the separation. I here illustrate what I have said.

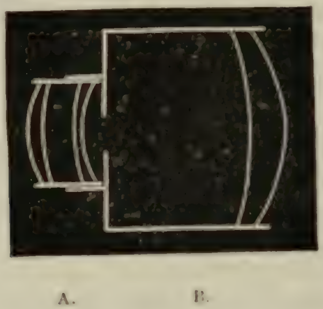
One such corrector will serve for a great variety of lenses of different foci, to which end it is desirable to have the means of effecting the separation just mentioned, because such is their power for correcting distortion that by their adjustment not only may the distortion of contraction—or barrel-shaped distortion—be cured, but even that of an opposite nature be induced.

I do not advise the employment of this corrector for either landscape, portrait, or group work, when a single cemented lens is made use of for such purposes, for as I have said, the fewer the reflecting surfaces in an objective the better, but only when the photographer is confronted with an architectural difficulty in the form of a building which is to fill or nearly fill his plate. Drawing his corrector from his pocket, and inserting it in front of the lens diaphragm, he thus extemporizes a lens which is quite free from distortion. As the cost of these lenses is so little (2d. each was the price I paid) one can afford to keep a few beside him for experimental purposes.

In working with them I have not found any disturbance of the chemical and visual foci, but the resulting pictures have invariably been sharp. This, too, was the experience of the late Mr. Cole, the architect, who always employed lenses corrected in a manner analogous to that now recommended, and his work was noted for its sharpness and delicacy.

But, you will say, I am merely describing a triple lens, such as at one time was a commercial production. Yes, in one sense it is; but whereas the triple was an objective complete in itself, each of its components being achromatized, this fulfills the function of the triple at a nominal cost, is applicable to any lens, and leaves the landscape lens always ready for fulfilling its special function in pure landscape work. Still, I am only describing it as an expedient for those who do not possess special appliances for special work, which, of course, are always to be preferred.

[To render more plain, if possible, the relative positions of the correcting lenses and the real objective, we give a diagram which shows them at a glance, A. being the removable correctors and B. the achromatized landscape lens.—Ed. *British Journal of Photography.*]



DISCUSSION.

Mr. Dallmeyer said that Mr. Taylor had described his modification as more or less of a makeshift, but he thought from an optician's point of view that the lens should always be sent out as perfect as possible for the work it had to perform. With respect to the lecturer's remark about Goddard's lens, he would point out that there was a considerable difference between that lens described by Mr. Taylor, and the new rectilinear landscape lens his house had just brought out. The Goddard lens was of the Petzval form of front, connected with a deep meniscus behind. Distortion was undoubtedly cured by this, but he had found that the field was extremely curved. After some considerable study and experiments, he had found that the Gauss form of front, with shallow curves, gave the best results, the marginal definition being very perfect.

Mr. Wollaston asked whether, since there was an air-cell between the lenses, condensation therein would not have injurious consequences?

Mr. Dallmeyer said that opticians could easily make the combinations separable. He might further remark that, as an optician, he would be quite willing to have his lenses tested by the State, as proposed by Mr. Harrison. He was as anxious to turn out first-class work as the public was to buy it.

Mr. Taylor, in replying, said the condensation was avoided in Goddard's lenses by cementing the edges of the combinations, and hermetically sealing the air-space. He had brought one of Goddard's lenses with him, and also one of Mr. Dallmeyer's, and he would point out that as a matter of fact the curves were flatter in the Goddard than in the Dallmeyer. Goddard was a most capable optician: but, being a very poor man, was unable to push his wares commercially, and so very few lenses were made. He used dense crown lenses because he could not afford to buy the then expensive flints. As to Mr. Dallmeyer's remarks about makeshifts, he would point out that his father had himself pointed out that the back combination of a rectilinear could be used for landscape work.

The Chairman said he felt he would not be misunderstood in saying that any one who described a makeshift conferred a distinct benefit on photography, for makeshifts were necessary at times. That Mr. Taylor's adapter was a makeshift was evident from the fact that it was not achromatized. With regard to Mr. Dallmeyer's lens, he could, from personal knowledge, state that it did what was promised of it.

PRESERVING PYROGALLOL.

BY MAX BOELTE.

FOR nearly three years I have been watching the serials published in this city in order to see if this question would be raised, for it has always surprised me that almost every formula given to the fraternity by the respective platemakers, and also other investigating persons, showed that sulphurous acid should be employed! There are but few platemakers in this country who have set forth a formula containing other acids—which, if I remember rightly, were salicylic and nitric, and but one has advocated citric acid.

As your editorial article in BULLETIN of 25th February, invites your readers to give their opinion and experiences, I now take leave to submit the following to you. As far back as 1883, when I still resided in Cuba, and soon after having taken up the development with pyrogallol, I convinced myself that the employment of dry pyrogallol, as was then recommended, was not the real and rational way, for it was a trouble always to have to weigh out so many grains when making up the developer, and as there are difficulties connected with the weighing of such small quantities, I thought that it would be perhaps better to make up a stock solution. Well I did so—measured all as sharp as possible, but found that the keeping qualities of those stock solutions did not turn out to be what I wanted. Knowing that pyrogallol has a great tendency to oxidize, I thought the matter over and began to make some experiments with water and acids—and as the sulphite of soda had just been received by our stock dealer, and having read a formula where this chemical was recommended, I set to work. This formula, with the sulphite of soda, gave me a surprisingly fine-toned negative, of fine printing quality; however, the development with this formula was slow and the solution made did not keep its strength as long as I had expected. The matter interested me much, and I soon began to make my experiments, in order to find out how to prevent the oxidizing of the pyrogallol solution. As already stated, this was in 1883, and at that time and in that part of the globe we, as yet, had nothing but the sulphite of soda in crystals and pyrogallol from three makers; but as *nomina odiosa sunt*, I will mention only the countries where those pyrogallols had been made. The following is a copy of my note-book.

Water, 2 ounces. 5 grains Pyro per 1 ounce Water.	Pyrogallol.			Observations.	Temperature.	
	From United States.	From England.	From Germany		Air. °F.	Solut. °F.
	Discoloration on surface set in at					
Well-water	7 Min.	10 Min.	12 Min.	Water slightly calcareous.	88	76
" boiled and hot	10 "	15 "	18 "	" "	"	200
Distilled water, cold	15 "	24 "	30 "	" "	"	76
" hot	18 "	26 "	35 "	" "	"	180
Well-water with 20 per cent. sulphite	80 "	93 "	105 "	" "	92	84
" sulphuric acid	114 "	121 "	137 "	" "	"	80
" nitric acid	130 "	136 "	168 "	" "	90	82
" salicylic acid	143 "	140 "	168 "	" "	88	78
" citric acid	197 "	186 "	229 "	" "	94	70
" formic acid	209 "	201 "	237 "	" "	95	88

As will be seen by the preceding table, the temperatures of air and water were carefully noted. The vessels containing the solutions were shallow glasses of about 1½-inch diameter. The sulphuric and nitric acids were 1 drop per ounce and the other acids 5 grains per ounce.

Later on I made other experiments with distilled cold and hot water, and the results were still better and convinced me, that in order to make a pyrogallol stock solution, nothing but distilled and boiling water should be used. The developing strength of the different combinations are more or less all in favor of citric and formic acids—however, these two acids, as I found out later behave slightly different with the different brands of pyrogallol. I have kept stock solutions made up with citric acid and distilled water for as long as six months, without any change in color or falling off of its developing power.

Complaints are often made that the developers of such a formula or other do not work, and it is even asserted by the complainants that they were made up in the most accurate way. A little investigation generally brings out the black spot very soon, for in most cases, no care and attention were given to the water employed.

However, the water plays an important *role.* I have seen many photographers who mix their developers by mere guessing *i. e.*, they take one ounce of pyro, so much of the sulphite and a few drops—even without counting them—of sulphuric acid, and others still even do not measure so many ounces when they are in a hurry. I have often heard—"Oh that's all right—water is water and a little more or less of this or that does not do any harm." And what is the consequence? Trouble when developing. And then they blame the platemaker and maintain that the plate was too slow or too fast, and that his sensitometer numbers are not right. The rational making up of the developer and the use of the right class of water—even if it gives them a little more trouble, bears its recompense largely in itself. Well water or hydrant water contains much more air than boiled or distilled water and the latter is absolutely free from organic matters, which, as is well known, contribute largely to the decomposition. The more the pyrogallol is sublimed the greater is its tendency to oxidize—this should be borne in mind always. Furthermore, the proportion between the pyrogallol and the acids is of great importance.

The greater the addition of the acid to the pyrogallol the longer will it keep clean but the less powerful will be the action of the developer. There has been published a formula which reads as follows:

Sulphite soda c. p. crystals	4	ounces.
Warm distilled or melted ice water	4	"
Sulphurous acid (strongest)	3½	"
Pyrogallol	1	ounce.

which shows the proportion of 3½ ounces sulphurous acid to 1 ounce of pyrogallol, which, according to my experience, is a rather high proportion. I have worked this formula as it reads, but changing the proportion of the sulphurous acid and employing sulphite of soda, granular, I have got still better results. It is not my intention to discuss either the above or any other similar formula, but I understand that the chemical combination of the sulphite of soda and sulphurous acid is a product called sulphate of soda, and this, as is well known, is not the desideratum which accelerates development, and therefore I prefer any developer made up with other acids than sulphurous acid. I fully agree with the article of the *British Journal*, for I have found that pyrogallol solutions with sulphurous acid do not keep their developing power as long as solutions made up with citric or formic acids.

The pyrogallol should be kept always in light and air-tight vessels, for the more sublimed it is the greater is its tendency to absorb moisture and oxidize.

In making up a stock solution it is best to dissolve the sulphite of soda (granular) in hot distilled water, and when fully dissolved add the acid, and when cooled, to add the pyrogallol, keeping the solution well stoppered in a dark place.

[In the above paper the author probably means sulphuric acid when he says that sulphurous acid and sodium sulphite give sodium sulphate when combined. It is not sodium sulphate that is formed but sodium acid sulphite, or bisulphite. To form sodium sulphate from sodium sulphite it is necessary to add sulphuric and not sulphurous.—Eds.]

ANNUAL MEETING OF THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

At the annual meeting held on Tuesday evening, April 10th, the following officers and directors were unanimously elected for the ensuing year:

C. W. Canfield, President; Henry J. Newton, Vice-President; Clarence S. McKune, Secretary; C. C. Roumage, Jr., Treasurer; H. G. Piffard, M.D., James H. Stebbins, Jr., J. Howard Wainwright, George P. Rowell, David Williams, Cornelius Van Brunt, H. T. Duffield and Charles Simpson.

The annual reports read showed a prosperous condition of the society, both as regards its finances and membership.

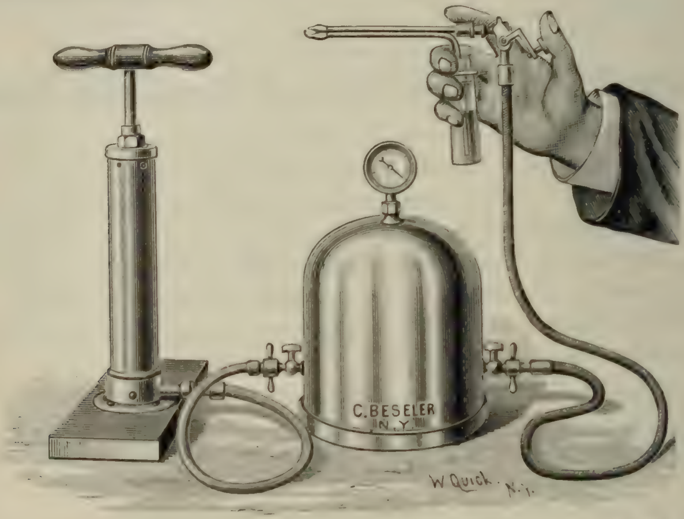
AN IMPROVED METHOD OF MAGNESIUM LIGHTING SPECIALLY ADAPTED TO STUDIO AND GALLERY USE.

By H. G. Piffard, M.D., *New York.*

The past six months have witnessed a remarkable development in the use of artificial illumination for photographic purposes. The Gädicke powder and its various modifications and imitations; the writer's gun-cotton method and the photogenic pistol cartridge, are the principal methods that have been employed. Recently, Mr. Armstrong, in England, proposed to blow pure magnesium through an alcohol flame, and carried out his plan by using an ordinary powder blower with a rubber bulb attachment. By quickly compressing the bulb a fine jet of magnesium powder was projected against the flame, the heat of which caused its ignition. By this means he was able to obtain a single brief flash of great intensity, often quite sufficient for the purpose. It occurred to the writer, however, that this method could be considerably improved by employing a reservoir of compressed air in connection with the receptacle which contained the powder. The tube connecting the air reservoir with the powder receptacle should have a quickly acting valve or cut-off. To compress the air in the reservoir it is necessary to have a small compressing pump. With these means one can always keep on tap a sufficient quantity of compressed air and magnesium powder. The apparatus, including pump, copper cylinder for holding the compressed air, and the holder for the powder, with the necessary tubes, etc., are regular articles of commerce, and can be obtained without difficulty at a cost of from about thirty dollars upward. The alcohol lamp which I find best adapted to the purpose consists of a small brass box, three inches long, one inch and a half wide and an inch deep. This is packed with asbestos or mineral wool confined in place with fine gauze. The box should have a cover. When wanted for use the wool is saturated with alcohol and lighted and the magnesium powder is blown through, giving an intensely brilliant actinic light, the duration of which can be regulated at will.

If compressed oxygen, instead of air, is used, the effect is still more striking. The oxygen can be obtained, ready compressed, in large cylinders, such as are used in connection with the oxy-hydrogen lime light.

The accompanying illustration exhibits the general arrangement of the apparatus, except that the terminal spray tubes for atomizing liquids are removed and a powder-blower substituted.



The novelty of this method of producing the magnesium flash-light consists in the use of a reservoir of compressed air or oxygen, in connection with a suitable stop-cock or cut-off and the requisite tubes and connections, together with an alcohal or other suitable flame for igniting the magnesium.

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"CLEANING UP THE HANDS."

To the Editors of the BULLETIN :

I HAVE read both of the criticisms on my note published in a recent number of the BULLETIN. Neither of the gentlemen, however, seems to have understood my suggestions. I am quite conversant with the effects of chromic acid on the skin, although I have not had an opportunity to read Dr. Janeway's article. I sympathize with Mr. Bolte sincerely, and his article makes me feel glad that I published my note, for my suggestions will evidently be of use to those who are working with the "dreadful drug," and who, by the application of the principles of this method, may avoid such results as Mr. Bolte describes.

The solution that I use, is prepared by acidifying a solution of potassium dichromate with sulphuric acid, and is hence a weak solution of chromic acid. If one rubs the skin with this, he will notice that a yellow spot is produced, and he will observe further that this stain is very difficult to remove by simple washing. Even soap has not always the power to remove it. If the application of chromic acid be repeated frequently, difficulties, such as Mr. Bolte has been unable to avoid, will follow.

If, however, the fresh yellow stain be moistened with dilute ammonia, it will be observed that it will wash off easily. The philosophy of this is that ammonium chromate, which is formed by the action of ammonia on the chromic acid, is very easily soluble in water, and has, moreover, not the power as an oxidizing agent and dye that is possessed by chromic acid. If my method is followed, as I directed, no fears need be entertained of any dire results. I hope that those who are interested in the matter will take the trouble to try the experiment of proving for themselves the action of ammonia on the dichromate stain. Especially those who work with the dichromate should do this, for I am convinced that had Mr. Bolte cleansed his hands with dilute ammonia after working with the dichromate he would not have suffered from the ulcerations he speaks of. I have used this method of cleaning up the hands for a number of years, especially in organic chemical work, and have not yet suffered from any bad effects.

Mr. Laudy disposes of the matter in a manner as concise as it is incorrect. He states that I have been liberal with kinks for old birds. I have never offered any kinks to old birds. Mr. Laudy has evidently not read my article through, and has not understood the portion that he has read. It is hardly fair to castigate me for what I have not said. "Any mixture," writes, Mr. Laudy, "that contains chromic acid, will remove not only the stains, but the flesh as well." I have not recommended the use of a strong solution of chromic acid, such as Mr. Laudy evidently refers to. His statement is absurd in this connection. Mr. Laudy also fails to grasp my method of removing the chromic acid by converting it into the soluble ammonia salt. Of course, all chemical treatment of the skin should be done with discretion. Indeed, not a few of the photographic chemicals are poisons or explosives, and caution, as well as common sense, must govern their use. I might add that in using this method care should be taken not to make the solution of ammonia stronger than I have suggested, else its causticity may be too apparent, and the cuticle of the skin may be acted upon as in the case of a harsh soap.

Peter T. Austen.

MOUNTING PRINTS.

To the Editors of the Bulletin :

Twenty-five years ago when the Photographic Exchange Club, originated by the late Mr. H. T. Anthony, was interesting so many men in experimental photography, I thought that all methods of mounting pictures on card-boards had been tried with the idea of avoiding cockling. A few weeks ago I tried a plan that I will repeat when I am again on my feet. I describe it that others may try it also. Noting, that the curve of a whole size mount on an 8 x 10 card is greatest lengthwise, I made a print very wet with plain starch paste, then in mounting I used the double rolling machine sold by the publishers of the Bulletin, but in place of laying the card on a flat surface, I laid it on the curved surface of the cover of my Remington type writer. This bent the card in an arc, and I placed it to dry with this curve maintained by means of four tacks in a board. The ends of the card butting against the tacks, the card arching up. When dry I found the mount under the strain of the shrinking picture was quite flat. The idea being that as the cards usually dry crooked with the picture down in the hollow, I dried the print on a hill of card-board thinking that it would shrink flat. I hope others will try this way and report the result as I am not able to repeat the experiment. Yours truly, Coleman Sellers.

BROOKLYN ACADEMY OF SCIENCE—PHOTOGRAPHIC SECTION.

To the Editors of Anthony's BULLETIN:

THE Photographic Section of the Brooklyn Academy of Science, at Warner's Institute, Brooklyn, was duly organized on Monday evening, March 26th. Temporary officers were elected until the first Thursday in May, when the annual election of officers will take place.

J. W. HOLBROOK, Jr., *Temporary Secretary*,
462 Hart street, Brooklyn, N. Y.

OBITUARY

THEODORE S. LAMBERT.

MR. THEODORE SARONY LAMBERT died at his residence on East Seventy-seventh street, New York, March 31st last. He was one of the most prominent French Canadians in this city, and was President of the Canadian Democratic Club. He was born at Nicolet, Quebec, in 1843; and at the age of twenty he graduated from Nicolet College with high honors. He then went to England, where his father's family resided, and afterwards traveled in all parts of the world. He held important patents in various photographic processes, which yielded him a handsome income. In company with Claude Lambert, a Frenchman of similar name, he made considerable money out of the Lambrotype or carbon process. He was a very hospitable man, and devoted to his family. His literary abilities were of a high order, as he contributed articles to journals in several different languages. He was educated as a priest, but liked business better and gave up his priestly studies. He was a nephew of Napoleon Sarony, the well-known New York artist, his mother being Mr. Sarony's sister. He leaves a widow and three children to mourn his loss. To his bereaved family and friends we extend our sincere sympathy in their hour of trial.

OUR ILLUSTRATION.

AMONG the many handsome photographs to be seen on Broadway, New York, there are none that are more attractive than those of Mr. B. J. Falk, an example of whose work adorns this issue of the BULLETIN. Members of the theatrical profession are particularly fastidious about their photographs, and Mr. Falk has been uncommonly successful with them. The study which we give with this issue of the journal is one of his many good efforts and is a type of fine work of this character. We are very fortunate in securing these pictures as the fire in his handsome studio spoiled it for work for some time. The prints were made on the well-known N. P. A. albumen paper by Messrs. Roberts & Fellows, of Philadelphia.

◆

MINISTER (to bereaved widow)—"Yes, Mrs. Mildew, John was such a good man; always the same, and you could know where to find him at all times."

WIDOW—"Yes, that's so." (Sob.)

MINISTER—"And then, in money matters he was always so open-handed. I remember a time I needed money badly, and John went down in his pocket for the whole sum. Ah! it was such a help."

WIDOW—"Has (sob) it (sob) ever been (sob) paid back?"

ANTHONY'S
Photographic Bulletin.

EDITED BY
Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.,
and a corps of practical assistants.

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Advertisements should reach us not later than the Saturday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, six, twelve or twenty-four issues.

E. & H. T. ANTHONY & CO., Publishers.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

INFORMAL MEETING, MARCH 21, 1888.

The *Vice-President*, J. B. GARDNER, in the chair.

Secretary O. G. MASON gave notice that at the regular meeting in April he would illustrate and explain the working of several new photographic instruments. A new system of camera construction and a shadow blender for printing purposes. He would also illustrate apparatus used in photographing animals in motion, and show many interesting results obtained.

The *Chairman* inquired, what was the best neans of restoring old and distempered nega-ive baths?

Mr. MASON replied that his usual method vas to precipitate the silver with carbonate of oda; wash the deposit in several changes of vater, and then redissolve it in the smallest ossible quantity of C. P. nitric acid. When lissolved, add a sufficient amount of pure vater to indicate by the hydrometer forty rains to the ounce. Such a solution, he said, required to be only slightly acid, and in his hands, this method of treating old silver baths was always a success.

Mr. EHRMAN also gave his testimony in favor of this mode of procedure, at the same time intimating that it would be far better to escape all bath troubles (and their name was legion) by substituting emulsion dry plates.

This lead to some discussion respecting the making of line work negatives. Some contending that those engaged in making process negatives still continued to use bath plates, and regarded it impossible to use any others with the same success. Others replied to this by saying, that with such workers, the force of habit and the want of experience in dry plate work, made it impossible perhaps with them; but that was no positive proof that it could not be, and would not be accomplished by their successors.

Mr. GARDNER stated that a late pupil of his came to him for instruction in line work negatives. The usual mode of procedure was carefully observed in making the silver bath, but on attempting to use it every negative was found to have what photographers usually call "oyster-shell deposit," on some portion of the plate, and on a different part of all the plates that were used in the experiments. Finally, it was resolved, after a number of remedies had been resorted to, to try what could be accomplished by boiling and neutralizing the bath with bicarbonate of soda. This was done, and a sufficient amount of clarified water added to reduce it to the proper strength—slightly acidified, and another series of experiments made, but all to no purpose. The same oyster-shell deposit made its appearance, and other imperfections too numerous to mention here. It was therefore thrown aside and another sample of nitrate of silver, from a different maker, was used in the same way as the first had been, being careful to make no changes, excepting the silver. In this second bath the difficulties disappeared, and could be used with the most perfect success.

The conclusion therefore arrived at was, that the fault must be with the nitrate of silver and nowhere else.

As a last resort, and what doctors might call "heroic treatment," the first bath was treated to a dose of cyanide of potassium, 120 grains dissolved in 2 ounces of water, and added to 60 ounces of the silver solution. It was then thoroughly shaken and immediately filtered, slightly acidified, and another experiment made with it.

(*To be continued.*)

Bibliography.

Practical Guide to Photographic and Photo-mechanical Printing. By W. K. Burton. London: Marion & Co.

This handsome small octavo volume of 350 pages contains a fund of practical information that we do not know where to find outside its covers. From the pen of such a writer as Professor Burton, nothing but good practical methods and processes were to be expected; but we are surprised at the concise and thoroughly systematic way in which he has taken up the various parts of his subject. There are forty-six chapters in the volume; three of these are devoted to the history and general introductory matter; eleven chapters treat of silver printing and the various processes connected therewith. Then follow chapters on the treatment of the negative before and during printing, vignetting skies, composition and printing. Gelatino-bromide printing is also considered, together with gelatino-bromide emulsion printing. A chapter is also devoted to defects in silver prints; another treats of the utilization of residues, etc. Then follow chapters on the carbon process, and also on platinotype. Another useful chapter is upon mounting prints. Then follow the chapters upon photomechanical processes, beginning with Woodburytype and continuing through stannotype, photolithography, albertype, photozincography, the asphalt process, photo-engraving, phototype, Ives and analogous processes, down to Obernetter's photogravure. The two last chapters are devoted to transparent positives and blue prints.

Altogether, the book is a very valuable one and the price (one dollar) is very little for such a storehouse of good things.

Photography Applied to Surveying.

By Lieut. Henry A. Reed, U. S. A. New York. John Wiley & Sons.

The application of photography to surveying has long been known in Europe, and both French and German journals have had considerable space devoted to the subject. But in England and America very little attention has been paid to it. In this handsome treatise by Lieutenant Reed, of West Point, we have the first explanations in the English language of the methods and apparatus pertaining to this extremely useful application of photography. In the volume before us, a small quarto of about sixty handsomely printed pages, we have sections upon the history and general principles of the subject; plane perspective, cylindric perspective, radial perspective; the camera without a lens; telescopic and balloon photography; and the various applications of photographic surveying. We think that American surveyors and civil engineers owe much to Lieutenant Reed for the pains he has taken to bring this subject into its present good shape in our language. The work he has done personally upon this application of photography has fitted him specially to speak with authority. We have seen a very handsome map of West Point, N. Y. and vicinity made by this method by the author of this volume, and it is a striking example of the utility of this method of surveying. The great saving of time, and the far greater number of details obtainable in these photographic maps are advantages not to be obtained by the older methods of procedure. The methods of photographic surveying have only to be known to be appreciated, and Lieutenant Reed's volume is the best book upon the subject that we know of in the English language.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the Bulletin. *Correspondents will please remember this.*

Q.—E. O. D. writes: I send you to-day, by mail, a cabinet photo of a little girl and a kitten. The reason I send it is, that I may ask you what you think of it. Please let me know through the Bulletin?

A.—The picture is very good; but you would get greater detail in the shadows by using more side light. The posing is excellent, and the general artistic effect very pleasing.

Q.—J. S. A. writes: Will you answer through the Bulletin the following questions: 1. On the inside of my ground glass there are several spots like drops of water; how can I get rid of them and not injure the glass? 2. Which is the best acid to use in the silver-bath for sensitizing N. P. A. Paper? 3. Will it injure silvered paper to dry it by the stove where there is no white light? 4. Will ordinary tin answer for a toning dish? 5. Should there be any more bicarbonate of soda added to an old toning bath that has been used, after adding a little more chloride of gold? I use the bath once a week. 6. Why will a fresh made developer for ferrotypes, to wit, 1 ounce of protosulphate iron, by weight, 1 fluid ounce of acetic acid, 1 fluid ounce of alcohol and 16 ounces of water, work better than when old—say ten or twelve days old; does the acetic acid or iron, or both, lose strength? It is longer developing, and there is a yellowish sediment on the film after fixing. 7. What causes black spots on ferro plates at the opposite end from where the developer is poured on; it appears at the time the image does?

A.—We do not understand your first question, but think the spots may be due to grease. Try clean soap and water. For the bath use chemically pure nitric acid. It is not well to dry silvered paper too quickly; the nitrate may crystallize on the surface. Tin will not do for toning dishes. Your toning bath will need more bicarbonate if it is acid; it should be slightly alkaline; test it with red litmus paper which should turn blue. Old ferrotype developer is not good to make clean pictures. Both acetic acid and iron lose their strength by keeping, especially if the bottle is not well stoppered. We do not understand the question about spots; send us a plate.

Q.—G. R. J. writes: Can you inform me what is the diameter, in inches, of the apertures of lenses from the table of Mr. W. K. Burton's table of comparative exposures?

A.—These figures are obtained by dividing the focus of the lense by the diameter of the opening in the diaphragm and these openings will vary according to the size of the lense used, thus $\frac{f}{16}$ for a lense with a 16-inch focus means a diaphragm with a 1-inch opening.

Q.—A. W. B. writes: Will you please tell me, through the columns of the BULLETIN, of any good preparation to use for spotting out white places in photographs? I use India ink but it does not adhere enough; the burnisher rubs it off. Some photographers use salt to redden their prints before toning. Can you tell me what is the reaction of the solution, acid or alkaline?

A.—Use gelatine water, 5 grains to the ounce, to rub down the India ink before spotting and allow to dry thoroughly before burnishing. Salt should have a neutral reaction, and is generally used to prevent blistering of the prints.

Q.—J. R. M. writes: Please answer following question through the columns of your worthy BULLETIN? Will a skylight, 10 x 14 feet, made of ribbed plate skylight glass, and being within 8 feet of the floor at lowest point, give sufficient light for all kinds of portraiture, provided there is nothing to obstruct the light from the outside?

A.—We believe it would work very well indeed.

Q.—Miss N. E. R. writes: I am learning to paint photographs, and use Winsor & Newton's colors (moist water); but I cannot make an even uniform background, and would like to ask what would be the best material to use, and an easy method for coloring backgrounds on albumen prints? Also, where I can obtain the materials you recommend. In an article by Mr. John Bartlett, on "The Art Value of the Instantaneous Flash Light," he speaks of using the most rapid kind of plates. Can you give me the name of these plates?

A.—We cannot help you in coloring photographs from any personal knowledge that we have. Perhaps some of our artist subscribers can help you. In regard to the plates you refer to, we do not know the brand used; but Stanley plates are being largely used for this kind of work, and with much success; they are all that you need.

Q.—F. A. R. writes: Will you please send me a formula for enameling prints? Have you any book about working up bromide paper (Reliable) in water colors?

A.—You will find various methods of enameling photographs explained in the "Silver Sunbeam," issued by our publishers. All that is necessary in coloring bromide prints is to apply the color as usual; the paper needs no sizing or preparation.

Q.—C. A. R. writes: In making portraits with Stanley's Tropical Dry Plates, using Stanley's conc. developer, how shall I proceed so as to get more contrast between the face and the hair, clothing, etc.? Using Anthony's ready sensitized A paper, and his A, B and C solutions, how can I get a black or blue-black tone?

A.—1. To get more contrast and density in negative give less exposure, and use five or ten drops of a 12-grain solution potass bromide in developer. 2. Print deep from a strong negative. fume paper for fifteen or twenty minutes before exposure.

Views Caught with the Drop Shutter.

W. H. WALMSLEY & Co., of Philadelphia, send us a handsome catalogue of their cameras, lenses, etc., in which we find many good things from the factories of our publishers.

B. J. FALK, the well-known Broadway photographer of New York, suffered a severe loss from fire lately, but we are glad to note that he is rapidly recovering from his crippled condition.

MR. L. M. PRINCE, of Cincinnati, gave us a call recently, and the visit was a pleasant one to us.

Mr. H. C. Cady, of P. Smith & Co., Cincinnati, has bought the Columbus branch of their business and will continue the same at 6 East Broad street, Columbus, Ohio, under the firm name of H. C. Cady & Co. Those who know Mr. Cady will be sure that the business he has conducted at Columbus during the past eight years, will be continued with the same success.

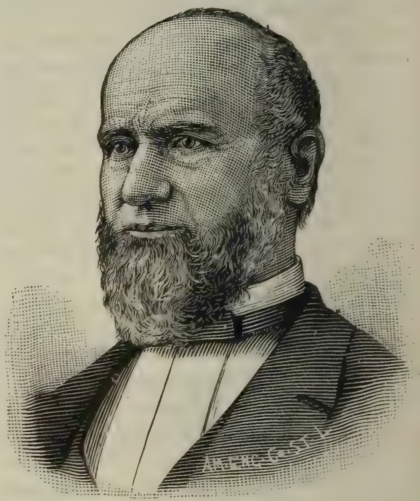
Mr. E. O. Zimmerman, of St. Paul, called on us. He came to receive his brother, C. A. Zimmerman, who returned from Europe where he had been for nearly four months, for the benefit of his health. The steamer arrived on Friday, April 6th, bringing the wanderer, and we are happy to say, in good health and spirits.

Mr. Maris, of Thomas H. McCollin & Co., of Philadelphia, visited us a few days ago, and we were glad to see him.

The American Photo-lithographic Company had a small fire in their works recently; but the damage was not such as to cause much delay and they will shortly be active again.

H. A. Hyatt, of St. Louis, has bought the apparatus and patents of Kuhn Bros. for making stamp photographs. These are those pretty little pictures that are so popular for advertising on envelopes and the corners of letter heads. Mr. Hyatt will send particulars if written to at 8th and Locust streets, St. Louis.

Messrs. Tucker & Butts, the photographic merchants of Buffalo, have just opened their handsome new building. It is seven stories high, 50 feet wide and 87 feet deep. The front is of iron, and iron enters largely into the whole structure within, making a practically fireproof building. It is supplied with both passenger and freight elevators. Polished oak is used in the staircases and trimmings of the first story, and all the floors are hard wood. French plate glass also gives its richness to many parts of the building. The design of the outside is quite unique. Balconies project from the center of the upper floors, and bay-windows below, from which fine views of Main street and Niagara square are seen. We give above an excellent likeness of the owner of this handsome structure, and wish him every success in his enterprise.



David Tucker.

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ARTOTYPE

E. BIERSTADT

OUTWARD BOUND.

ANTHONY'S
Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

APRIL 28, 1888. Vol. XIX.—No. 8.

MUTUAL BENEFIT IN THE PHOTOGRAPHERS' ASSOCIATION.

As a new feature of usefulness, it is proposed to organize a mutual benefit bureau in the Photographers' Association of America. This we think is an excellent idea and should be fully discussed and thought over by all the members of the present organization.

It is a well-known fact that those who earn their living from daily labor of any kind are often unable to provide for the sustenance of those near and dear to them in case they die. Ordinary life insurance in a measure provides a method for making provision for one's family after one dies; but unfortunately there are too many difficulties in the way of applying this to each and every case. The rates of premium in the case of the more well-known companies are quite high because they have very large and highly organized methods of business that involve the payment of large salaries to officers and clerks to carry out the various plans of insurance. Some companies have a mutual benefit plan that is less expensive, but, these also are more or less expensive to those who command but small salaries. Various orders of operatives and others have organizations that embrace some such mutual benefit feature as is contemplated by the officers of the Photographers' Association of America. In organizations of this kind it is the feeling that the members are working in a common cause, are mutually interested in the same kind of occupation, and are therefore more in sympathy with one another in the time of misfortune.

The simplicity of the method proposed by Messrs. Carlisle, Motes & Potter, which will be found on page 179 of the BULLETIN for March 24th last, is a great point in its favor. To put it into a few words, every member of the association will contribute one dollar to the fund to maintain a treasury, upon which the officers can draw to give a legacy to the family of any member who dies and is a member of the association and its benefit bureau. By this means the family of any deceased member will receive as many dollars as there are members in the benefit bureau and the association at the time of his or her death (for we note that the ladies are also thought of in this admirable feature of the association). So that, if there are one thousand members in the association, the family of any member who dies will draw one thousand dollars from the benefit bureau; but this is to be the highest amount paid to any individual.

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There is one feature of the proposed benefit amendment to the constitution that we feel should be changed; it relates to the health of the member at the time of application for membership to the benefit bureau. It reads: "Persons who may hereafter desire to participate in the benefit department shall furnish the treasurer, at their own expense, a certificate, signed by a regular practicing physician, which shall set forth that the member, at the time of application, is in good health," etc.

It appears to us, that as this is to be a mutual benefit feature of the association, that each and every one of the members is interested in the health and good living of every other member; and furthermore as these certificates are provided at the expense of the applicant, the above section of the proposed benefit amendment should be changed to read "a satisfactory certificate" instead of "a certificate." We propose this because we are unfortunately aware that there are many practicing physicians who are far too careless in giving certificates of health in cases of this kind. With the simple organization that is proposed by the committee who have the matter in charge, there can be no provision for medical examination in case of disputes. Again, we think that submitting these certificates to the treasurer alone will be a great mistake, because if he is careful and rejects one he has to shoulder the responsibility alone, which is too much to ask of one man. We think the admission of members to the mutual benefit department should be in the hands of a sub-committee of the executive committee of the association which sub-committee should include the treasurer of the Association.

We have made the above suggestion to correct what we conceive to be a single weak point in the new feature of the Photographers' Association of America. In the future we hope to see a still further development of the mutual benefit feature, a kind of endowment fund for disabled photographers. If the new legacy feature works well, and we sincerely believe it will, then let us all make a fund to enable our unfortunate brothers to finish their days in comfort by providing for misfortune in the time of prosperity. It is a most unfortunate fact that we are all too improvident and do not give the future much thought when health and prosperity are with us. As life ebbs out our capacity for producing wealth or even a competence becomes less and less, and it is only by organized effort of some kind that this can be provided against.

We sincerely hope that this newly proposed feature of the Photographers' Association will be thoroughly well discussed and that at Minneapolis the work will be fully inaugurated. We shall be glad to hear from any of our readers upon this extremely important subject.

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EDITORIAL NOTES.

The Club of Amateur Photographers in Vienna intends celebrating the Jubilee of H. I. and R. Majesty the Emperor by holding an International Exhibition at the I. and R. Austrian Museum of Arts and Manufactures. This Exhibition, which will be open from September 15th till October 25th of this year, is to include not only photographs taken by amateurs, but also chemicals, apparatus and other photographic requisites.

The Club's Daguerre Medal and Certificates of Honorable Mention will be awarded to the best exhibit or exhibits in each class of photography, photographic apparatus, lenses, etc., provided the jury deem any exhibit or exhibits of sufficient merit. From the decision of the jury there shall be no appeal.

Amateurs have not to pay hire for the space allotted to them. On application they can obtain the use of frames free of charge.

All communications should be addressed to the Chairman of the Executive Committee, Herrn CARL SRNA, VII. Bezirk, Stiftgasse 1, Vienna.

Mr. G. M. CARLISLE, the Treasurer of the Photographers' Association of America, is now located at Providence, R. I., and he will leave there for Minneapolis on July 1st. Members remitting dues of the Association should note this.

THE BROOKLYN ACADEMY OF PHOTOGRAPHY have started an album of photographs that is to include all pictures of the blizzard or pertaining thereto, made by either amateur or professional photographers. These pictures should be unmounted prints, and may be of any size upon any kind of paper. The committee having this matter in charge also undertake to make prints from negatives in case the owners have not the time to do so. We think the idea a very good one, and advise those having prints or negatives of the late blizzard to communicate with Mr. H. Tremper, 54 Park place, Brooklyn, or Mr. W. Longman, Jr., 207 Pearl street, New York.

Mr. O. J. DEWHURST, the Secretary of the Lynn Camera Club, sends us a capital group picture of four colored waitresses taken with the magnesium flashlight. It is well done in every respect.

ONE of the latest novelities in portraits that has recently come to our notice consists of a picture of a head printed with a full front page of a newspaper as a background. This is the work of Mr. J. S. Bowen, of Paris, Illinois, and is uncommonly effective. He writes us that he will supply the method if correspondents will send stamps in writing him. It appears to be a case of double printing; but it is so well done that the detection of the method is very difficult.

THE Amateur Photographers of Cornell University have recently organized the "Cornell Camera Club." The officers are W. E. REED, *President;* A. VICKERS, *Secretary*, and G. S. BLISS, *Treasurer; Executive Committee*, Messrs. REED, BLISS, and W. B. S. WHALLEY. They have a well-fitted dark room and all conveniences for good work. The meetings are twice a month. Club field days are a good feature and are sources of pleasure and profit to all who attend. The country around Cornell University is an uncommonly fine field for the camera, and we hope to see some good work by this new club.

WE have to congratulate our good friend Mr. Sam. C. Partridge, of San Francisco, California on his marriage to Miss Clara Elvira Martin, which took place April 5th last. May their days be long together, and as full of joy as their hearts can wish.

THE second semi-annual convention of the Texas State Photographers' Association will convene at Waco, Texas, on June 7th, and be in session two days. All Texas photographers are invited to take part in this convention. Messrs. S. T. Blessing, J. N. Caradine and John Swartz are the committee. For any particulars address Mr. S. T. Blessing, Dallas, Texas.

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

Focusing in Reproducing Drawings—The Most Simple Instantaneous Shutter—The Principle of Autotype Printing—Hartnack's New Microscopical and Wide-angle Lenses.

When reproductions (of drawings, paintings, maps, etc.) are to be made, particular care, as is well known, has to be taken that the focusing screen is exactly parallel with the drawing. To control this, photographers generally measure with a piece of cord if the distance between the original and the lens is the same on all four corners. But this way of measuring is rather primitive and does not prevent mistakes. The board carrying the drawing is therefore ordinarily so placed that by exact measurement it is parallel to the front of the camera and that it moves inside of iron rails, admitting any adjustment in a parallel position. Such arrangements are to be seen in all large institutions whose only occupations are reproductions. But if the portrait-photographer should make, exceptionally, such a reproduction, he will have to apply simpler means. In copying oil paintings, for instance, a little deviation would not make much difference, but architectural drawings and maps require more care. To find here the exact parallel position Mr. C. von Schmidt recommends a simple method. Of two small mirrors S and S^1, one is fastened to the board which carries the drawing and the other is fastened to the camera. Between these is suspended the perpendicular weight L. In the mirror S^1 (fastened to the camera) a hole is scratched sufficiently large to look through. The camera is then moved until the reflected picture of the weight L is in line with the weight itself. Ground glass and board will then be exactly parallel.

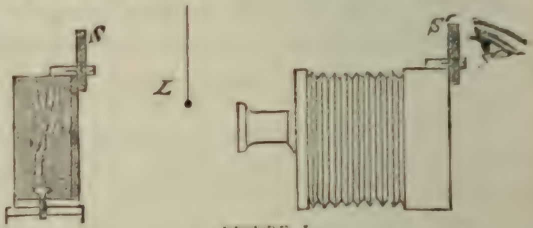

FIGURE 1.

Several parties have asked for my opinion about the best instantaneous shutter. This is an embarrassing question to answer. The worst of it is that the best shutters become easily deranged and that, while traveling, there is no time for repairs. With regard to this I would like to draw attention to the shutter which I have been using during the last five years.

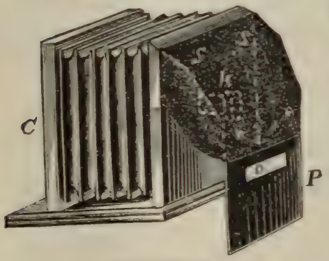

FIGURE 2.

The whole is really nothing but a piece of black pasteboard *P* (which may be mounted with velvet on one side), for a 13 x 18 camera about 20 c.m. wide and 30 c.m. high; in the middle is a slit *O*, cut out with a knife; its opening being equal to the objective diameter. This piece of pasteboard is almost sufficient by itself if the operator has a practical hand in it. The lower part of the board is held close to the objective—when ready to take the view—with the other hand the cap is removed and the board is pressed against the objective. When the suitable moment has arrived the pasteboard, with a quick motion, is directed downward so that the opening *O* passes the objective and the latter is covered again by the pasteboard. The condition is that the pasteboard does not touch the objective while passing it. It is therefore best to move it with a curved motion, with the hollow or concave side towards the objective *K*. Whoever has any practice with this shutter is able to make exposures of $\frac{1}{40}$ second with great facility, and can also extend the time as long as he pleases. In sunlight (which falls mostly from behind the camera) or under a clear sky it may happen that the blackboard is too much illuminated on the back, or by an unskillful movement the reflected light will fall from the shutter into the lens. To avoid this a piece of velvet, *S*, a little wider than the camera and about $\frac{3}{4}$ as long as the pasteboard is sufficient. This is fastened with tacks to the latter as well as to the camera, and it will keep back all the bright and dazzling rays. But the piece should not be longer than necessary so as to prevent folding during exposure. If it is desired that the velvet, while hanging down, should take the place of the lens cap, it must be doubled at this place, a single thickness admitting some light. The pasteboard might also be made heavier by a piece of tinfoil or similar material to guard against the wind. Otherwise this shutter is extremely cheap and can easily be produced. It is also not patented.

The autotype processes are pretty well cultivated now in Europe as well as America. The manner of production is well known. The object is to divide the natural half tones of photography, which cannot be reproduced by printer's ink, into nothing but single dots or grains, being more close together in the black parts, and thinner and more dispersed in the lighter parts until their entire absence. To attain this, an ordinary half tone photograph is taken on paper upon which is laid a so-called transparent net or grain plate, and from this a negative is made in the ordinary manner. The same shows under the microscope all half tones interrupted by grains or dots which form in the negative light and transparent openings, and of course are reproduced in black in the print. These dots can be recognized quite distinctly in the pictures with a microscope. In the dark half tones these dots become wider and form lines; in the black parts they form a cohesive surface. It will be recognized on closer observation that the dots in the high lights of the pictures are thin, becoming heavier towards the darker parts of the half tones, until they run together. How is this achieved? A definite explanation about this is wanting. In the net or grain plate all dots are equally distant from each other, while, according to the above-mentioned requirements, they should be denser and wider in the dark parts and smaller and farther apart in the high lights. In the autotype process this requirement is accomplished in a mechanical way. I explain it in the following manner:

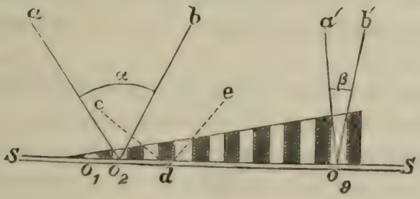

FIGURE 3.

Every half tone in the negative represents more or less heavy accumulations of black silver, similar to Fig. 3. The highest parts (like O^9) form the lights of the original; the deepest (like O_2) the shadows. If a grain plate is laid upon the half tone, the grains act as blackenings; at this place originate therefore openings in the negative which are visible in the figure. These openings are of uneven depth. If the negative is now copied upon a transparent film of chrome-gelatine or asphaltum, the light penetrates so much deeper as S S increases in strength. But the light strength at the bottom of the openings is very uneven. If the negative lays horizontally, fully exposed to the firmament above, a part of the latter, of the width of the angle *a b* will act upon the center of the opening O_2, while a much smaller part of the firmament *a′ b′* will act upon the center of the opening O_9. The light strength is therefore considerably less in the deep openings; in the foregoing case nine times less than in the shallow ones, like O_1 O_2. The latter will therefore print much stronger than the openings in the high lights; yes, the latter will partly be lost if not sufficiently long exposed. To this is to be added another important point. In the low openings the rays will fall in a strongly inclined direction, like *c d*, and *e d* over the upper edge of the opening towards the lower edge opening on the other side, causing, so to speak, widening of the light effect in the lower openings. These will therefore print wider than the high openings; and with very low openings, as shown by the example of the rays *c, d, d, e,* a confluence of the light action can even take place. This will effect, notwithstanding an even width of the openings, an unequal printing of the same. In the lights, they furnish by printing small and weakly effected dots, in the half tones wider and more powerful ones, which in the deepest half shadows will be partly confluent, and more fully in the dark shadows. This circumstance determines artistic effect.

It is true that Mr. Müller of New York has recommended the use of plates with graduated lines, in place of the simple net plates and black lines. I do not see an advantage here, but a disadvantage, because the openings are partly filled by the half tones, and the widening of the same in the shadows is partly prevented.

New and interesting lens-constructions have again been put upon the market lately, of which I expect much. A new objective, after calculations of Dr. Schröder, has been produced by Professor Hartnack, in Potsdam, whose microscopic objectives enjoy a well-deserved reputation, and which is destined to fill out the place between the photographic aplanat and the microscopic system. The weak microscopic systems, which are ordinarily applied, if more extended microscopic objects, histological preparations, polished stones and metals are to be photographed, have besides their proportionate light weakness and their chemical focus, a very moderate expansion of the evenly illuminated available picture field, comprising hardly more than 6 to 8 degrees. The small aplanats, which are used for the same purpose, require very strong diaphragms and give a picture field with little plane. The new objective, which is furnished without diaphragms, comprises an extremely large picture angle of almost 26 degrees, and covers to the edge of the field with almost equal sharpness and without the least trace of chemical focus. The instrument, which I have tested, has an equivalent focal distance of about fifty m.m. and forms a sharp object of nearly four square c.m. The light power is quite extraordinary; for enlargements 10 to 15 times by ordinary 15-candle gaslight the exposure was 3 to 8 seconds upon bromide of silver gelatine. The instruments, whose general introduction is only to be desired, can also be executed in other sizes, as for instance from 4 to 6 inches equivalent focal distance.

The second objective is a wide angle one, calculated by Prazmowsky in Paris. It is very much like the pantoscope and surpasses it considerably in light power. It is furnished with an iris diaphragm. Said diaphragm can be narrowed or enlarged *ad libitum* by turning an outer ring; it is made fast to the objective and cannot be lost. The size of the opening is given by figures on the outer ring. It would be very desirable to have this iris diaphragm made also by other opticians.

BERLIN, March, 1888.

PHOTO-MICROGRAPHY AND THE MAKING OF LANTERN SLIDES.

BY WILLIAM H. WALMSLEY.

[Read before the Society of Amateur Photographers of New York at their special meeting of March 21, 1888.]

(*Continued.*)

So much in brief for the camera; a few words must now be said, descriptive of the microscope I have used with such satisfaction for some years. Feeling the want of some special features in this essential instrument, I had the Messrs. Beck construct one embodying them, which has met with much favor both in England and this country, and which seems to leave little to be desired. In design, it differs very slightly from that of their Popular stand, but is very much heavier, and larger. The milled heads, controlling both coarse and fine adjustments, are unusually large, thus giving very delicate motions to both. The stage is mechanical, with horizontal and vertical movements of the best construction, and revolves absolutely in the optical axis. The slide carrier, (operated by clamping), will admit a slip 1½ inches wide, and is provided with an adjustable stop for use with a Maltwood Finder. The substage, achromatic condenser and mirror are carried by rack and pinion on a rigid central bar beneath the stage, and can be entirely removed if desired. The instrument can be used vertically, or inclined to any angle for table work, whilst for photography it is placed in a horizontal position and the compound body replaced by a short cone which permits the rapid divergence of the rays of light immediately upon passing through the object-glass. This gives complete illumination of the entire plate, with low powers and bellows closed; a very valuable feature where large objects are required to be but slightly magnified.

Almost any of the various makes of plates now in the market may be used in photo-micrography, but those possessing the two qualities of considerable sensitiveness and great density are to be preferred. I have found those made by Richardson, of Leominster, Mass., (the Diamond brand,) to be superior to any others in these particulars. Ripley's plates are also excellent. But the best results I have ever obtained with objects showing a variety of colors, especially blues, greens and yellows, have been with the orthochromatic plates which Mr. Carbutt is now making. With these I have made negatives from specimens that absolutely refused to yield any results with ordinary gelatine plates. A notable example of this will be found in the specimen of a bee's sting with poison sac attached, to be shown to-night. In the mounted object, the sting-sheath and all external appendages vary in color, from a dark-brownish orange to pale lemon, whilst the poison sac, which naturally was without any color, has been stained a light blue to render it visible at all. With an ordinary plate, if the exposure be sufficiently prolonged to give any details in the darker parts, the blue sac is entirely obliterated, whilst the orthochromatics give equal color values to all.

The importance of measuring the amplification of each negative, and keeping a record thereof, cannot be too strongly urged upon those who undertake photo-micrographic work, since the absence of such data will detract very greatly from the value thereof. It is quite unnecessary to do this with each exposure, as the powers of any objective can be measured in a very simple manner at the outset, and a table made for future reference. The following method is recommended as being easy in practice and sufficiently accurate for all ordinary work. A glass micrometer ruled in $\frac{1}{100}$ and $\frac{1}{1000}$ of an inch is placed upon the stage of the microscope, the rulings sharply focused on the screen with the camera closed to its shortest dimensions, and a negative made. The bellows are then to be extended to their full capacity, the rulings refocused, and a second negative made. The magnifications of each can then be readily measured with a rule divided in tenths of an inch. Thus, if the $\frac{1}{100}$th rulings on the negative made with closed bellows, should measure one inch apart, the amplification would be exactly 100 diameters; and if the distance between them with bellows extended twenty-five inches, should be two and a quarter inches, the magnification would be 225 diameters, and the value of each inch of extension, four diameters. In practice, this will be found to agree very closely with the performance of a $\frac{1}{6}$ objective.

The limits of this paper having already exceeded those originally intended, I can only allude very briefly to the subject of lantern slide making, as I have no desire to weary you by over talking, and must leave the slides, presently to be shown, to tell their own tales. All of these, with a single exception, and absolutely all of the negatives from which they were made, are on gelatine dry plates or films. The negatives were all developed with pyrogallol; the positives with the same in some instances, in others with ferrous oxalate, and the balance with hydroquinone, my preference being decidedly for the latter. Where glass plates were used, equally good results were obtained with those of Eastman, Ripley or Carbutt, specially coated with slow emulsions. But the most satisfactory work followed the use of Eastman's recently introduced Transferrotype paper developed with hydroquinone, the slides from which *seem* to equal the best wet plate work. My experience with it has been too limited to enable me to assert this positively, but the certainty with which it can be manipulated exceeds that of any glass plate I have ever used. Some slides made with it will be shown you to-night, and speak for themselves.

Much better results can be obtained by enlarging or reducing in the camera, than by contact printing. For the latter purpose, the negative must be specially made of the proper size for a lantern plate, and even then I have rarely found the resulting pictures equal to those produced in the camera. For this purpose I use a Beck "Autograph" lens of seven inches focus, which cuts with the most exquisite sharpness and delicacy; but doubt not that any good rectilinear lens will give excellent results.

Diffused daylight is greatly to be preferred for this purpose to any other, on account of the even illumination it affords. If, however, daytime cannot be spared, artificial light may be used, if a condensor sufficienlty large to cover the negative, be placed between it and the source of light.

Finally.—If it were possible to give common English names to the objects about to be shown upon the screen I would gladly do so, but as their sponsors have in most cases conferred upon them only scientific ones unfamiliar to many, I am placed in the position of either giving the latter, or allowing the poor things to pass nameless before you. Of the two horns of the dilemma perhaps it will be wise to choose the former, although I still have a vivid recollection of being impaled thereon once upon a time. It so happened, about a year since, that in a neighboring city, a microscopical society gave its annual soirée in the Normal School building, and of course all the fair young students were invited to attend. I too had been asked to give an exhibit of photo-micrographs as a portion of the entertainment, and, without knowing what I was getting into, found myself confronting an audience of more than a thousand, ripe for fun as well as instruction. I am bound to admit, however, that they conducted themselves quite decorously, even under the provocation of the longest names bestowed upon any of the objects, but the local paper in reporting the proceedings the next day, whilst conceding the merits of the pictures as such, thought that Mr. Walmsley would have added greatly to their interest and value, had he given them such names as would have been intelligible to ordinary christians. Therefore, begging your pardon in advance for any sins I may commit in this direction, and thanking you for your kind and patient attention to my remarks, we will proceed with the exhibition of the slides, first throwing upon the screen a few very poor pictures of my camera and special microscope.

PRESIDENT WALKER'S ADDRESS—SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

THE reports provided for by the Constitution will be listened to, I am sure, with deep interest. They will show the results of the last year's labors, the growth and prosperity of the society, and its prospects for future usefulness within its field. The report of our Treasurer will advise you that our finances are sound, that we retire from our respective duties with an unimpaired credit and with ample provision for the future. No society can prosper except it be in good financial health, any more than can an individual. He will also make a detailed statement for your information, both of receipts and expenditures.

The Secretary will advise you that the membership of the society has increased from 175 in April, 1887, to 260 in April, 1888, an increase of 85 members. This showing is highly flattering, and a source of congratulation upon the result of our labors in this direction. It has been one of the objects of your President to make every one feel welcome here. He has striven to act the part of "host" to all such as were disposed to accept of our hospitality, in which he has been earnestly seconded by all his fellow officers. It is therefore fair to presume that the addition to our membership has been largely due to the courtesies extended here, which have resulted in establishing an element of good-fellowship, so that these rooms have become the daily resort of a considerable portion of the members for conference and work.

We might stop here to ask, Who are these? They are artists, chemists, clergymen, physicians and merchants, who form a large portion of our membership. Could any one wish to be found in better company? Is there any association where a wider field can be found with all the advantages of this combined intelligence? I leave you to answer.

During the last year an extended series of lantern exhibitions have been given, about two thousand lantern slides having been thrown upon the screen for the edification of members with their families and friends. The success of these exhibitions has been largely due to the efforts of your Lantern Slide Committee, who have labored for your entertainment with untiring zeal. To the most active of that committee I return my heartfelt thanks. I shall ever owe them a debt of gratitude for their earnest support, and for their faithful and conscientious performance of the duties assigned to them. The entire responsibility of these exhibitions was in their control, and no one could be more thorough in their efforts to please you and your guests.

In looking over the year's lantern slide work I find great improvement. Greater care has been taken in the selection of subjects, and members have instituted a friendly rivalry as to who shall produce the better work. The development of slides has also been the subject of much research, and improved developers have given excellent results. Matting has received deserved attention, in which direction Mr. J. Wells Champney has greatly assisted by his friendly criticisms and valued advice. All these influences have combined to effect very satisfactory results in the production of good work.

The slides principally thrown upon the screen during the last year have been from the collections of members of this society, and of the Philadelphia, Cincinnati, Boston and Pittsburgh clubs.

With reference to the work of our sister societies, I am much gratified to note a marked improvement.

The notable exhibits of the year have been from views by Lieutenant Howell, consisting of an interesting and valuable collection made by him in Japan, China, Siam and Corea. Another set of views of the same character were presented by Mr. C. D. Irwin, of Chicago. Upon two occasions Mr. George Marshall Allen entertained us with a series of slides on Alaska and California, which were very noticeable for the beauty of his work and the subjects presented. Mr. Edward Leaming, who had made an excursion to the Windward Islands, also exhibited the result of his labors in a series of about one hundred and fifty views of scenery in that part of the world, which were received with much favor. Dr. Hoagland also favored us with a collection made during a trip to Northwest Idaho, and later, Mr. Clarence S. Pullen delivered an interesting lecture, accompanied with views of life and warfare amongst the Apache Indians of Arizona and New Mexico, holding the rapt attention of his audience for over two hours. Nor must I forget to mention that very interesting exhibit of Mr. Jacob A. Riis, of the "Other Half—How it Lives and Dies in New York." During the season we have also been largely indebted to Mr. Simpson, Mr. Lawrence, Mr. Eckert, Mr. Frisbie and many other members for numerous examples of first-class work. We have also much enjoyed the contributions of our English brethren, whose work, when thrown upon the screen, has been received with great delight, not only because of its general excellence, but also because of the inherent love all Americans have for English scenery and points of historical interest familiar to every American school-boy, which seem as dear to us as to them. Their cathedrals and ivy-clad ruins; their towns and hills, "rock-ribbed and ancient as the sun," all combine to entrance the imaginative and romantic mind.

In fact, our exhibitions during the year have been a decided success. Our rooms on such occasions have been filled to overflowing with intelligent and always appreciative audiences. Then let the good work go on, so that not only ourselves, but our families and friends, may enjoy with us the fruits of our labors.

In February last a conference was held at Philadelphia for the organization of a "Lantern Slide Interchange," at which we were represented by Mr. Richard H. Lawrence. The report of that conference has been before you for some time, but no action has yet been taken. This needs immediate attention.

It is for you to say whether we shall become one of the members and promoters of that interchange or not. The Boston Society, I am advised, has declined to join on technical grounds, and has determined to form another interchange on some different basis. The committee to whom this matter was referred merely report the results of the conference and ask your advice and action. It is somewhat of a question whether or not we should find it to our advantage to join any interchange; but having given much consideration to the subject, I have concluded that we ought to do so, and I am in favor of adopting the report of the Philadelphia conference.

It has been said this society should be able to find sufficient work of its members to keep its screen busy. But while this is very laudable it is not practical. We have found frequent exhibitions to be pleasing to our members. These could not be were we dependent upon our own work. When you remember that to fill the requirements we must have about two thousand slides, you will note that it would be impossible to do this with the number of our present slide makers. The interchange has and will continue to give us the requisite number, and also largely tend to influence us to excel the other societies. Upon one thing, however, I should insist. Each society should test the slides sent to them for exhibition, and be at liberty to discard such as in their judgement do not come up to the standard of first-class work or have some special merit. Nothing can be more painful to your officers than the exhibition of a poor set of lantern slides; it displeases the audience and embarrasses all concerned. I advise you to set down your foot very firmly on this. I have had a year's experience and know whereof I speak. It is far preferable to exhibit ten examples of first-class work than many poor or even mixed slides. If an interchange cannot be arranged on this basis, then I am strongly opposed to it.

During the year we have had many demonstrations of new processes, new apparatus, and kept alive to the march of improvement constantly going on about us. I have only time to mention a few of these on this occasion, and first beg to refer to the stripping films, to perfect which has been the untiring effort of some of our most prominent manufacturers, both in this country and in England. The Eastman Company gave a demonstration before us during the fall which was of great interest. These films appeared to be almost perfect in their technical excellence, but so far the average amateur seems to be unable to conduct the "stripping" of the film and applying the "skin." The makers are still busy endeavoring to effect a more easy method of accomplishing this, at present, difficult task. I need scarcely say how anxiously the whole photographic community are watching for the exchange of plates for films. What a weight will then be taken off the minds and backs of us all, when we can carry a thousand negative films not weighing more, if as much, as a dozen glass negatives! When this is done the comfort and convenience of the amateur will be greatly enhanced. We therefore wish them God speed in this mighty change, which is the Mecca of all our hopes to-day.

I am glad to note at this time that some of our members are also experimenting in the production of a suitable film, and with considerable prospect of success; in fact they may yet get the start of the manufacturers.

Probably the most important and interesting event of my administration has been the improved methods of lighting for photographic work at night. While the use of magnesium in various forms, such as "ribbon" and powder, has been long known and occasionally employed, it never was made practical until its introduction here by one of the members of this society, Dr. H. G. Piffard, who discovered a very simple method of igniting magnesium powder by the use of guncotton, and who read a paper on this subject before us early in the winter. I may here mention that Mr. George G. Rockwood, of Union Square, came earnestly to his and our support, and was the first one to utilize the new light. Need I recall with what surprise and joy this discovery was hailed, and that the whole photographic world took up the new light, and set to work the genius of all interested in still further improvements in the igniting compound, in the apparatus for lighting, and in making these perfectly safe? So that to-day a multitude of lighting powders are in the market and in use. Of course the old cry of "I told you so" was soon heard. These wise men had known all about it; had been born in just such a light; had been fed upon magnesium and gun-cotton when in their swaddling clothes. A hundred of them claimed the invention, or nearly so, and few were found willing to give credit to the member of this society, where it properly belongs, and to the facilities afforded by the accommodations here, and the spirit of emulation so happily existing amongst the membership, not only in this but in all other matters of interest.

The great desideratum in the preparation of these powders has been to make them safe, so that they may be used without fear of explosion and resulting injury. The next point has been to compound a powder, susceptible of complete instantaneous combustion, for quick work. This has undoubtedly been wholly accomplished. And now again comes Dr. Piffard, who at one stride proposes to give time exposures for galleries and interiors by a simple method, which he will explain this evening if time permits. Where will this end? Is it to go on orever? It seems the genius of invention never slumbers.

It is a familiar maxim that "there is nothing new under the sun," that is, nothing totally unknown. Hydroquinone appeared to us as something new, and was hailed with popular favor as a developer. Yet it had been used by English photographers for several years. It is no new thing. But the fraternity took it up again and gave it new life. They found it gave very satisfactory results, especially in the development of lantern slides.

It was said you might leave the plate in the solution indefinitely without danger of fog. It had, and still has, a great hold upon our favor for certain purposes, and many members will use no other developer. In the early stages of its popularity, the demand for it was so great that the entire quantity in this market was consumed, and neither love nor money could buy a dram of it, until new importations should arrive. The wholesale dealers must surely have thought that the whole photographic community had gone mad on the subject. But with all its apparent advantages, it can never take the place of the old developers, such as pyro and iron, in whose embrace the plate finds an active and perfect development, not reached otherwise.

The improvements in the various apparatus are of course familiar to all of you, and tend to greater perfection in compactness, lightness and economy—all considerations for the amateur.

The improvements in Detective Cameras are noticeable. The Anthony "Climax," with Dallmeyer, Ross, or Darlot lenses; the "Scovill," with Beck or Wales lenses; the Tisdell, with Gundlach lens, are all excellent and cheap—ranging from twenty to sixty dollars, thus bringing them within the means of almost every one.

In the early stages of the photographic fever, the amateur rushes at once upon his fate, and purchases a large and expensive outfit. He feels that he would like to take all creation in his first view. He cannot conceive that a 3¼ x 4¼ plate is large enough for him. Yet after years of experience, and weary and expensive work, he throws aside the 6½ x 8½ camera for a 4 x 5—following in the steps of those who have gone before him. Until he has reached that culminating point in his madness, he has never dreamed that it would be within the bounds of possibility for a 4 x 5 picture to suit his purposes. But experience, as in all things else, teaches him that a small negative can be enlarged to any reasonable extent at any time. When he has satisfied himself of this, he never uses a larger size, except upon rare occasions. I therefore advise all beginners to purchase small sizes at first, and increase them to larger ones when required. It is a measure of economy which must always be considered. The best negatives I have seen, made by one of the most expert members of this society, were upon 3¼ x 4¼ plates. I should, however, advise the use of the 4 x 5 size as more convenient for printing.

(*To be continued.*)

LANTERN EXHIBITION—SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

On Wednesday evening, March 28th, a lantern exhibition was given, comprising 120 out of the 200 slides sent by the Camera Club of London, and several slides illustrative of the recent March blizzard in New York, which proved to be very entertaining to the large audience of members and friends present. The lantern was very creditably worked by Messrs. Lawrence, Eckert and Frisbie.

Before the lights were turned down, President Walker remarked that this was probably the last opportunity he would have to address the members and friends for sometime at least, since his term of office expired on April 10th, after which he intended to take a trip across the Atlantic in the large steamer "City of Rome."

He thanked the members for their support in attending these interesting exhibitions which were so instructive in furnishing the means for showing one's pictures to friends. He wished them all prosperity, and was sure the society would grow in interest and numbers. Though not a man of scientific attainments in photography, he had done his best, as President, to further its interests; had had a large share of the work to do himself, even to the duties of a janitor. He thought there should be more division of the work. As the exhibition proceeded he read the titles of the pictures.

The first view was in "Holly-wood Park," and was a delightful study of trees. Others, much liked, were entitled "Virginia Water," "Village Schools," "Horses Standing in Water," "Court Gate Glen," "Matlock in Derbyshire."

Several studies of trees, particularly of Newark and Burnham beeches, were very clear. "A view in Sheree, Surrey," "The Camera Club on an Excursion," "Rochester Cathedral Entrance and Door," "Boats at Rochester," three or four views of an old mill in Westerham, with beautiful tree and water effects, all proved to be very attractive.

A view by Mr. F. J. Barclay, entitled "Old Mansion in Kent," was particularly good; also another called "Eynsford Bridge."

Several slides by Mr. A. R. Dresser next followed, and were much liked, particularly his views around Sutton, "Old Granny," a very clear photograph of an extremely old woman; also his animal pictures of a "Peacock," "Sheep," and "Pigs." The pig pictures were specially good. One of his most artistic views was of a team of horses plowing in a field, drawing a peculiar heavy English plow.

A number of excellent slides by Mr. George Mason next appeared, some of which were "Diana's Fountain," "Swan Inn," "A Stone Bridge," "Cottage at Leeds," "Bull Point Lighthouse," "Inn at Hampton," and a "Cottage at Cockham, on the Thames."

A plowing scene, by Mr. William M. Robertson, was much admired.

"Hop Picking," and portraits of an old "Englishman and his Wife" in front of their cottage door (an excellent study, well lighted), by Rear-Admiral H. L. A. L. Maitland, were extremely interesting.

A view of "London Bridge," "Cockham Lock," "Spring Cottage," and a "Landing Place on the Thames," by Mr. Francis Howlett, attracted attention by their clearness and artistic qualities.

A very pretty slide was that of a boat having aboard two ladies, by Mr. J. R. Bridson. The reflection in the water was especially good.

Beautiful snow effects, particularly a snow tree at Torrey, and a cottage in the Isle of Wight, by Mr. F. G. J. Linton, were next shown.

A coast scene by Mr. S. Conway was good; also a very artistic and charming view by Mr. G. Davison, the genial Secretary of the Camera Club, entitled "Cottage at Shere."

The exhibition of the English slides terminated with three superb slides by Mr. Joseph Gale, two of which were entitled "Sheep," a splendid study, and a "Foggy Day on the Thames," having a bright foreground of snow against an inky sky.

Several views around New York, by Mr. Charles Simpson, showing some of the tremendous snow piles caused by the March blizzard were next projected on the screen.

They embraced scenes in 16th street, 14th street, along Sixth avenue; melting the snow in Howard street, by fires; the coal merchants in Baxter street peddling out coal to the poor people at fabulous prices, and "Five Points," before and after the storm. The pictures were fully up to Mr. Simpson's reputation for careful work. These were supplemented by excellent views by Dr. Nagle, of the Health Department, and two or three by Mr. Richard H. Lawrence; the latter had a fine view of "Broad Street," taken from near the U. S. Sub-Treasury building, and also of the "Statue of Washington" on the steps of the Sub-Treasury, as it appeared after the storm. This presented a most comical sight and brought down the house. One or two slides contributed by Mr. Baldwin were very much liked, as was also a "Rocky Coast" scene by Rev. E. C. Bolles. The exhibition ended shortly before ten by a few slides contributed by

Mr. Atkinson, the best of which was an extremely clear and artistic picture of some "Fern Leaves."

It may be stated that it was a somewhat singular fact that the night of the exhibition celebrated the fourth anniversary of the organization of the Society, the original date being March 28, 1884. Also on the same day of the exhibition the funeral of Mr. Joseph W. Drexel, probably one of the wealthiest members of the Society, occurred.

J. C. B.

RULES FOR THE BOSTON EXHIBITION.

THE rules adopted October, 1886, will hold for Boston except Rule 6, which has been suspended.

The committee of the Boston exhibition have adopted the following additional rules:

1. Entries must be made in accordance with the following classification :

   1. Landscapes over 6½ x 8½ inches.
   2. Landscapes 6½ x 8½ inches and under.
   3. Marine Views—Surf.
   4. Marine Views—Sail.
   *5. Figure Compositions over 6½ x 8½ inches.
   6. Figure Compositions 6½ x 8½ inches and under.
   7. Portraits.
   8. Animals.
   9. Still Life.
   10. Architecture.
   11. Interiors.
   12. Enlargements.
   13. Instantaneous Effects.
   14. Transparencies.
   15. Set of six lantern slides. Negatives and slides to be made by exhibitor.
   16. Set of six to twelve pictures by a foreign exhibitor, or taken in a foreign country.
   17. Pictures by any new process not before publicly exhibited.
   18. Pictures not otherwise classified ; micro-photographs, sculpture, etc., etc.

† 2. Each frame must contain pictures by one process only.

3. The Hanging Committee will arrange the exhibits as nearly as possible in accordance with the entry classification, to the end that all pictures of like class, size and process, may be readily compared. They may reclassify any exhibit they deem to be entered in a wrong class.

4. Entry blanks will be furnished, which shall be filled out by exhibitor in duplicate, with all particulars regarding exhibit. When two or more prints are mounted in one frame, a designating letter shall be placed under the center of each print ; and all letters so placed shall appear in the entry blank opposite the titles of their respective pictures. Nothing shall appear on front of frame except the letters referred to. Exhibitor's name and address shall be clearly written on the labels provided, which shall be attached to the back of each frame.

Hours of Exhibition.—The exhibition will be inaugurated on Monday evening, May 7th, at 7.30 P.M., by a private view, open to members and their friends.

The exhibition will be opened daily from 10 A.M. to 10 P.M. during the remainder of the week, closing Saturday afternoon, May 12th, at 4 o'clock.

Cards of Admission may be obtained free of charge from members of the exhibiting societies. Catalogues (price 25 cents) containing full particulars of the exhibits may be obtained at the gallery, or by mail from the Chairman of the Committee of Arrangements.

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* Figure compositions are to include groups and all pictures in which one or more figures make the principle interest of the picture.

† It is very desirable that prints of different classes and processes be framed separately.

Reception of Exhibits.—All pictures must be sent, charges prepaid, to the Boston Camera Club, care of the Boston Art Club, Dartmouth and Newbury streets, Boston, Mass., indorsed "For Annual Exhibition," and delivered before 9 P.M., Wednesday, April 25th, 1888.

Correspondence.—All correspondence should be addressed to Edward F. Wilder, Chairman, 50 Bromfield street, Boston, Mass.

Entry Forms.—Entry forms will be ready for distribution to applicants from abroad on March 1st, and to applicants in this country, April 1st.

The exhibition is open and unrestricted, except as noted in the rules. Amateurs and professionals are alike at liberty to compete, although the judges will be instructed to give the preference, other things being equal, to work entirely done by the exhibitor.

The names of the judges will be announced hereafter.

As the space at the disposal of the committee, while ample for an ordinary exhibition, is nevertheless more restricted than they could wish, it is suggested to intending exhibitors that they aim to send a few choice samples of their work, rather than a large number of specimens of only average merit.

The Committee of Arrangements.—Edward F. Wilder, *Chairman;* George E. Cabot, Francis Blake, C. W. Canfield, John G. Bullock.

THE THEORETICAL ASPECT OF ORTHO-CHROMATIC PHOTOGRAPHY.

BY CAPTAIN W. DE W. ABNEY.

LAST year at the Conference I gave some practical examples of ortho-chromatic photography, and this year I propose to deal with its theory.

Let me first briefly touch on the methods by which an ortho-chromatic plate is prepared. It may be taken that for a plate to be ortho-chromatic we must have a salt of silver in contact with a dye of some description. Such a dye may be combined with a silver salt, or it may be uncombined. Further, we may take it as an axiom that in the latter case unless the dye is a fugitive dye, no action will take place. Also, it may be taken as another axiom that only those rays which are absorbed by the dye (or the silver salt formed by it) and by the haloid silver salts (the bromide, chloride, and iodide), have any chemical action on the dyed film. For as I have often laid down before, no work can be done by radiations unless there is absorption, and that work done may be heating, or chemical action.

When Dr. Vogel first announced the fact that a dye added to a sensitive silver salt made the plate senstitive to those rays which the dye absorbed, the old collodion days were in full swing, and gelatine emulsion was unknown. The nitrate of silver bath was employed, and also collodion emulsions. In those days, apparently, Dr. Vogel found (according to a communication which appeared in the *Photographic News* for April 26, 1876), that, in order for dyes to be effective, the silver-nitrate ought to be in slight excess. In trying plates in which there was a slight excess of soluble chlorine he was surprised to find "that solutions of naphthalin red, or cyanized (cyanin) gave not a trace of action in the yellow or red on exposing them to the spectrum, whilst bath-plates colored in exactly the same way gave action in the same time; for instance, yellow and red stronger than the action in the blue of the spectrum." And again, in the same year, on May 5th, he says: "Further investigations have confirmed the opinion given in my last letter, that dyes like Magdala red and cyanin make the bromide of silver sensitive to the yellow and orange rays only in the presence of a trace of free nitrate of silver or any other suitable sensitizer, as tannin, morphia, etc."

Now, let us see what are all the possible ways in which a dye can affect a silver salt, taking it that the dye, or its compound of silver, is only acted upon where it absorbs in the spectrum, and that the subsequent special action on the silver salt is confined to this locality. If a dye chemically combines with a silver salt, as we know that some do with silver nitrate, as I pointed out in the *Photographic News* of 1876 then the matter is straightforward enough. Light will act on it, as it does on any other organic salt of silver. There may be another combination, however, between a dye and a salt of silver which is in the solid salt to form a double salt, or there may be a mechanical combination, such as takes place between alumina and a dye—in other words, the formation of a lake. So far as we know, this last combination is not a chemical one, but a mechanical one, though the molecules of each are very close to one another. There is, however, no interchange of atoms which there is in a chemical combination. Each is still a separate substance, although in such close contact. Now, when silver bromide is formed in gelatine or collodion in which the dye is present, the precipitation of a portion of the dye may take place on the same principle; as it may when a film is dyed by immersing the plate in a solution of the dye. We have in this case a more difficult business to deal with in tracing the action of light on such a dye than we have when the combination is a chemical one. Many of the dyes are fluorescent, and if the fluorescent light was of shorter wave-length than the rays producing it, then we might trace the action to these short waves of light which would lie nearer the violet end of the spectrum than those producing them.

Stokes's law tells us, however, that there is a degradation of wave-length, and that the waves of light are increased in length, and not shortened. Hence this explanation fails. Again, too, some dyes are impressionable which are not fluorescent at all.

Next the action may be on the dye alone, and the dye, as I have said, may form a nucleus for development. The dye may be acted upon, and the reduced or altered dye being in contact with the silver salt may partially reduce the silver salt by its contact with it, much in the same way that alkaline pyrogallic acid chemically reduces a salt of silver. In other words, the dye in its unacted-upon state is inert, but when acted upon becomes what may be termed a developer. The amount of "developer" in this case must be so minute that the change in the silver salt would be indistinguishable. But it must be recollected that an infinitesimal amount of reduced silver would be quite sufficient to act as a nucleus on which development can start.* When an emulsion is formed in gelatine, ammonia being present, it is asserted that the action of the dye is much greater. The fact that ammonia† accelerates the action of the dye in many cases gives a color to the developing action being a possible, and I may say probable, action.

It must be borne in mind that the chloride and bromide of silver both absorb ammonia in a very marked manner, and that even after washing they will hold it to some extent. The alkalinity of the salt, then, is favorable to this developing action.

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[*] Since I wrote this part of the paper I have been somewhat surprised to find that I enunciated the above in a very definite form some six years ago. In my Cantor Lectures at the Society of Arts, in 1882, I said:—If you take one of those analine dyes, such as a blue dye, and expose it to light behind a piece of black paper with an aperture in it, such as I have here, you get an image on the dye, such as you see. What is the meaning of that? The meaning is that the dye is oxidized, for if you apply an oxidizing agent you get the same result. Dr. Vogel found that if you dyed plates with some of these fugitive dyes—they were all fugitive to great extent which he used—he was able to obtain an extension of the impressed spectrum exactly in those parts of which the dyes absorbed, and he introduced the term optical sensitizer to describe the fact. Now, I am going to quarrel with that expression, because he explains it in this way: He says, in effect, that the sensitive analine dye is able to take up a vibration, and to direct it to something else. In other words, that when light has done all it can in endeavoring to bleach a dye, that its period is transformed, and it does something else on the silver salt which is in contact with it. Well, that is not a philosophical way of looking at things, because if you could only arrive at the principle, you might just as easily arrive at that principle of perpetual motion, which is a thing I am not prepared to admit. Now, I honestly say that for a long time these experiments staggered me, and the arguments Dr. Vogel brought forward seemed fully to justify his term of optical sensitizer as applied to the dye stuff; but eventually I was able to come to a different conclusion, and that conclusion I wish to put before you. If you have a substance which is oxidized in the presence of an haloid salt of silver, what do you expect? You expect that the haloid salt of silver would be reduced. If you place pyrogallic acid in contact with the haloid salt of silver, and help it to be oxidized by ammonia, you expect that the haloid salt of silver will be reduced, and I lay the action of the dye to precisely the same principle as the pyrogallic acid, which helps to develop the image; in other words, the oxidation of the dye causes a reduction of the bromide of silver, or iodide of silver, as the case may be, and simply provides a nucleus on which development can take place. I wish, however, to point out that Dr. Vogel has an objection to my explanation. He says, "Oh, but you require time to bleach things; you require time to alter them." So you do; you require time to blacken the chloride of silver; nevertheless, the slighest exposure to light begins the change in it, and so the slighest exposure to light begins the change in the dye, and on this principle, of course, the action of dyes upon sensitive films can readily be explained.

[†] Eder found that the alkalies and carbonates of the alkalies did not increase sensitiveness. In a dried plate these take crystalline forms, and can in no way be compared for efficiency with ammonia (NH_3).

There is no other method which I can conceive possible.

Mr. Bothamley has in an interesting paper, which he reported to the Society of Chemical Industry, given a capital *resume* of Dr. Eder's opinion as to the action of light on a dye. This excellent experimentalist considers (so says Mr. Bothamley) "that the dye unites with the silver bromide to form a molecular compound of the nature of a lake. (As we have said, this is quite possible.) The action of light on the dye and the silver bromide is simultaneous. The compound of the bromide and the dye absorb the light rays, and the energy which existed as wave motion is communicated to the molecules of the compound. The molecules are thereby thrown into such energetic vibration that their equilibrium is disturbed and the silver bromide is either decomposed into bromide and silver sub-bromide, or is brought into that state of unstable equilibrium in which it is readily acted upon by a reducing agent such as constitutes an ordinary developer. When the light rays are absorbed by the dye alone, the waves for the most part undergo photo-thermal extinction, and their energy is transformed into heat, a small proportion undergoing photo-chemical extinction, and being used up in producing chemical decomposition, since the majority of dyes are slightly altered by light. When, however, the rays are absorbed by the dyed silver bromide, the greater part of the wave undergoes photo-chemical extinction, and their energy is used up in decomposing the silver bromide, whilst only a small portion undergoes photo-thermal extinction."

I should like to make a few remarks on this explanation.

Radiation (or light, if you like to call it so) consists of undulations which are capable of doing work of some kind on a body on which it falls. The work may be heating the body on which it falls by the absorption of rays, or chemical action by decomposing such a body, or both. This is what is translated as photo-thermal extinction and chemical extinction. Now, from the above it is evident that the dye is considered first to receive the light, and we are told that by itself we have plenty of photo-thermal extinction (or heating of the body), and a little photo-chemical extinction (or chemical decomposition of the body); but directly the dye is in contact with the bromide, the two extinctions are reversed, and that chemical action is in the ascendant, and the silver bromide is decomposed. In other words, it comes to this, that the heating of the dye—for mark that the dye not being chemically combined with the bromide, the work done in it must be identical with that which would be done were it not in contact with the bromide—does chemical work in the bromide of silver. If this were the case, a hot iron applied to the back of the plate should be quite as effective. If the silver was a real chemical compound with the dye, such an explanation, with modifications, might be the case; but you are not dealing with a chemical compound in the case of a lake, but only with a mechanical compound—a very widely different thing. It is for this reason that I cannot accept this explanation.

Let us now see what would happen with various salts of silver should my theory be correct. I put on one side what would happen if the dye combines with nitrate of silver, or with the haloid salts; since, then, the action is more probably the same action as that we have on ordinary organic salts of silver, viz., a reduction to a lower form of saturation. What I shall turn my attention to, is simply what we would expect to find if the dye acted as a developer.

1. Supposing all the salts (without the contact of dye) had the same range of sensitiveness to the spectrum, we would expect that those salts which were most readily amenable to alkaline development should show most reduction by the dye in the parts of the spectrum where the dye absorbed, since in that part the dye should become reduced. The order of the haloid silver salts would then be (1) chloride, (2) bromide, (3) iodide.

2. If one salt of silver be more sensitive (without the dye) than another to that part of the spectrum where the dye absorbs; and if we suppose that all the sensitive salts were equally amenable to alkaline development, we should expect that the most marked effect would be on that salt which is most sensitive to that particular part of the spectrum, since the action of the dye would be supplemented by the action on the haloid salt.

The order would then be (1) bromide, (2) chloride, (3) iodide for the two dyes I shall consider.

Suppose we put supposititious values to them, thus :

	Relative facility of reduction by alkaline developer.	Relative sensitiveness to part of the spectrum which the dye absorbs.
Chloride	10	2
Bromide	5	10
Iodide	1	0

We should, by adding one number to the other for each salt, gain an approximate idea of the relative intensities we should have caused by the dye and the silver salt to either. Putting them in order we should have :

Bromide	15
Chloride	12
Iodide	1

That is, the dye should have 15 times as much effect on the bromide as on the iodide, and 1¼ times as much effect as on the chloride. Of course, here it is supposed that the exposure given is that necessary to bring out the part of maximum action on the undyed salts to the same density of development.

Further, if the silver salt was in contact with soluble bromide or chloride as well as the dye, we should, as in the case of alkaline development, expect the developing action of the dye to be retarded, the soluble bromide and chloride forming double salts with the bromide and chloride of silver. This is just what Vogel found in 1876, as I have already quoted.

Now, Eder and other experimenters have found, as I have found, that the action of dyes is quite different with the different salts of silver, and this development or nucleus theory fully accounts for this on the above grounds. Eder's theory, just quoted, will not explain the action, I think; nor will the theory which I understand as that of "optical sensitizers."

In reference to the chemical action of light on dyes, I would recall some experiments, published in the *Photographic News* and elsewhere, made several years ago by Dr. Minchin. He coated metallic silver and platinum plates with dyes, and made them the plates of a cell, and connected a galvanometer with them. He found that when light fell on the dyed plate a current was caused to flow in a certain direction, proving that a chemical action took place in the dye, and not a heating effect. Becquerel many years ago proved that a current was produced when it fell on chloride of silver, with which one plate of a similar cell was coated. In other words, electrical action was shown by the chemical decomposition of the compound in contact with one of the plates. I myself at one time thought of reading a paper on this subject to the Conference, giving an account of the various experiments which I had made some three years ago and more on an extension of this method. I have not had time to collect all the results of my experiments in an orderly shape, so have deferred giving them till a more convenient time. I may say, however, that all my experiments point to the action of light on a dye being always largely chemical. I will give two or three extracts from my note-book. On the surface of a silver plate chloride was produced. An exposure to white light of this as one of the pairs of plates in a cell produced a deflection of the galvanometer needle—through yellow glass none. The plate was removed and coated with a film containing eosine. White light produced a deflection, and through yellow glass there was also a deflection. Eosine alone on the plate, when exposed to the yellow light, gave a deflection of the galvanometer needle. This showed that a chemical action took place in the green, no matter whether the chloride was there or not.

(*To be continued.*)

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All communications for the columns of the BULLETIN *should reach us on Monday preceding the day of issue, to insure their publication at that time.*

OBITUARY.

JOSEPH ZENTMAYER.

One of the foremost of America's opticians, of which there are too few, has passed away. Joseph Zentmayer was born at Manheim, in Germany, March 26, 1826, and learned optical methods in that town when yet a boy. He came to America in 1848, and because of his exceedingly skillful mechanical knowledge and optical genius, he rose rapidly to fame. In 1856 he invented a condensing photographic lense. In 1869, President Grant, in recognition of his great optical abilities appointed him on the eclipse expedition of that year. He was the recipient of quite a number of honors during his busy life. The Franklin Institute of Philadelphia awarded him a silver and also a gold medal in the year 1874. At the Centennial Exhibition of 1876, he received a gold medal for his substage to the microscope for use with opaque objects; and for the same invention he received a gold medal at Paris in 1878. At the time of his death he was a member of the American Association for the Advancement of Science, the Franklin Institute, the Philadelphia Academy of Sciences, the Philadelphia Photographic Society and several other organizations.

He leaves a wife, four sons and three daughters, and also a name known the world over for fine mechanical ability and great optical genius. To his bereaved family we tender our sympathy in their hour of trial.

OUR ILLUSTRATION.

The charming artotype of Mr. John E. Dumont's study, with which we illustrate this issue of the Bulletin, is one of those beautiful pieces of photographic art that he is so skillful in securing. The vessel with her cargo bound to some distant shore, the tug dragging her alone until the winds can catch her spreading canvas, the rippling waters dancing around the bow, all go to make up a picture of life and beauty. There is always a charm about these little bits of marine life, and Mr. Dumont has the happy faculty of getting just such scenes with his camera. Life, motion, peace, that gliding away as if into dreamland, are all felt in looking at this beautiful study, and makes us long to be there, away from the city's turmoil, to drink in the fresh breezes that give life and vigor to the body and mind. The artotype is one of Mr. Bierstadt's best efforts and speaks for itself.

* * *

A NOVELTY IN PHOTOGRAPHY—WIDE AWAKE AND FAST ASLEEP.

To the Editor of the Bulletin.

Mr. Leon Favre, a French photographer of wide experience, has conceived, and applied for a patent for, quite a novelty in the line of photographic portraits. His idea is to make a picture or portrait which exhibits different characteristics of expression or emotion; that is, one view grave, another gay; one with eyes closed as if asleep, another with eyes wide open, all in apparently one picture. The different varieties of expression are obtained by looking at it alternately by reflected light or by transmitted light. For instance, looking down upon it the subject may appear to be asleep, the eyes closed; but holding it up to the light and looking through it the eyes are open and the expression possibly changed to a smile. This little affair has been very much admired by those who have seen it. As Mr. Favre does not speak English he has desired me to assist him. I have urged him very strongly to adopt a moderate figure for his invention in order that the entire fraternity may avail themselves of it. I urged him to adopt, and he has accepted my suggestion, the following figures for room rights for galleries outside of the big cities of New York, Chicago, St. Louis, etc., viz.: $10, which will include a specimen, instructions, and a license under his patent when issued. In the large cities the room rights will be $15 each, while an arrangement will be made for the exclusive control of it in towns where so desired. Parties interested in this novelty may address me as undersigned. My own customers have taken a warm interest in this little novelty and I think it will be a good deal admired. One novel way of showing it is to have it put in the end of a little box in which there is a light and a little pasteboard shutter, which by clockwork or automatically will let on the light from behind or cut it off. The invention has an infinite number of applications and I commend it to the fraternity both in their own interest and that of Mr. Favre.

Geo. C. Rockwood,
17 Union Square, N. Y. City.

DR. IVES'S DISCOVERY.

At the monthly meeting of the Franklin Institute, Wednesday evening, Frederick E. Ives communicated an important discovery in isochromatic photography made by himself. After referring to the objections made to the process employing collodion emulsion and chlorophyl, which is claimed to be the only one published which shows a difference between a black and a deep red without over-exposing orange and yellow, he said: "At last I have succeeded in securing, by a surprisingly simple procedure, the full action of chlorophyl upon commercial gelatine bromide plates.

"The results are already superior to anything that can be obtained with cyanine. The degree of color-sensitiveness obtained appears to bear a definite relation to the general sensitiveness of the plate employed, which should, therefore, be of the most rapid kind. They are prepared by flowing with the alcoholic solution of chlorophyl, *then drying* rapidly, *then soaking in water* for at least five minutes, after which they may be used at once. With the two-year-old chlorophyl employed the absolute color-sensitiveness is fully equal to that of the best commercial 'orthochromatic' plates, and is so distributed as to be capable of giving far more accurate results; but the blue-sensitiveness, which is greatly reduced by cyanine and erythrosin, is actually increased by chlorophyl, making it necessary to use an extra deep orange color screen with these plates."—*Philadelphia Ledger, April* 21, 1888.

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A woman has recently been elected Mayor of a city in Kansas. An enterprising dry goods man immediately announced himself as "Busselmaker to the Mare."

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A well-known Boston photographer was recently making a number of negatives of a subject in his studio and the sitter watched him very closely. He was using the well-known pneumatic bulb and tube to open and close the shutter, and when he had made the last exposure the sitter remarked: "Well, I didn't know you used your chemicals with a syringe."

ANTHONY'S
Photographic Bulletin.

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Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.,
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E. & H. T. ANTHONY & CO., Publishers.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

INFORMAL MEETING, MARCH 21, 1888.

(*Continued.*)

The difficulties first encountered all disappeared, and the remaining portion of the bath was at once treated in the same way and with the same satisfactory results. On three different occasions he resorted to the cyanide treatment, and on each occasion found this a success, and therefore cheerfully recommended it.

Another remedy he had often used, and always with good success, is to precipitate the silver with pure zinc. Wash the deposit with dilute sulphuric acid (1 ounce to 30 ounces of water), and then with three washes of clean water, or until there is no acid reaction in the last washing. After draining off the last water, immediately add sufficient nitric acid to dissolve the metal, apply heat, and continue it until the silver is fused. When cold, it is dissolved in pure water sufficient to make the strength required, slightly acidified, and is then ready for use.

On many occasions it is not necessary to go to all this trouble, as simple boiling will produce the desired results. In employing this method, he had been the most successful by using an evaporating dish with the capacity of holding double the quantity, or one-third more solution than contained in the bath to be treated. After filtering the bath, it is boiled until it contains about one-half the bulk it occupied when first put on the fire. This effectually frees it from any alcohol and ether it may have contained. The evaporating dish is now filled with water, thus reducing the strength of the silver solution to an extent that it will no longer hold the iodide and bromide salts with which it may be contaminated. A saturated solution of bicarbonate of soda is now added in small quantities until the solution has a decided alkaline reaction and a small quantity of carbonate of silver remains at the bottom of the dish. It is now evaporated to one-third its original bulk and then taken from the fire, and allowed to remain in the evaporating dish for six hours or more; it is then filtered and diluted to the strength required with a 20-grain boiled solution of nitrate of silver. It is now filtered and slightly acidified and is then ready for use.

It is well to always have on hand clarified water; and the manner of obtaining such, is to fill a large evaporating dish with ordinary croton (water) and add from five to twenty grains of nitrate of silver to each ounce of water and boil it for thirty minutes or more. When cold, it is filtered, and serves better for either making negative baths, or baths for paper, than the best distilled water ever used.

The irregularities and difficulties attendent upon the making of bath negatives, and the question whether the practical knowledge of making such negatives would not soon be classed among the lost arts, occupied the most of the evening, and it was resolved that the causes of some of these irregularities should be the subject for the next social meeting, April 18, 1888.

REGULAR MEETING, APRIL 3, 1888.

President H. J. NEWTON in the chair.

The *Secretary* reported that he had duly received for the section the usual photographic papers and journals contributed monthly, and a vote of thanks was tendered, as usual, to their respective publishers.

The Chairman of the Executive Committee reported that at the next regular meeting, May 1st, Professor L. H. Laudy would entertain the section; and his subject would be duly announced in the invitation notices of the meeting.

A cordial invitation was extended to all interested in technical photography to attend the informal meeting, to be held on Wednesday evening, April 18th.

The programme for the evening was then announced.

The *Secretary*, Mr. O. G. Mason, was now introduced to the audience, who, after a brief prelude, exhibited and explained, by means of the lantern, the working of several new photographic instruments and the peculiarity of the attitudes of birds and animals in rapid motion. He also described the apparatus by means of which these pictures were made, stating that they were taken, probably, in the shortest time on record. He said: "The tendency in mechanics and arts was toward the use of tools and machines constructed with interchangeable parts.

"Economy in construction and limited space for storage and use, two points important to many photographers, make the old methods of camera construction, requiring a separate instrument for each class of work, objectionable. With a view to the avoidance of these objections, a method of camera construction by interchageable parts had been devised, and by means of a few slides prepared for the purpose he hoped to plainly illustrate its main features."

These slides were then exhibited, showing thirty detached pieces of wood and metal, and a straight and cone bellows so constructed as to be joined easily when a five or six-foot camera was required. Mr. Mason stated, "that from these small pieces, five or six cameras could be constructed; on each of which, lenses varying in focal length, from the shortest to the longest, could be used." He then proceeded to illustrate the use of the combination in various forms and positions when required for different classes of work.

In introducing the second part of the subject, as announced, viz., the instantaneous photographing of animals in motion, he gave a brief sketch of the work done by Mr. Muybridge in California, and reiterated the doubts entertained by many protographers ten years ago, when told that the exposures had been made in the thousandth part of a second. To show how such a brief space of time could be measured, the speaker drew upon the blackboard a large circle to represent a wheel revolving at such speed as would carry any fine point on its periphery through a space of seventy-five feet per second. Upon the outer rim of the wheel was drawn a line ⅛ of an inch in width. The displacement of this line during the exposure would give the time employed. This method of measurement, the speaker said, was so simple and certain that there could be no doubt of its accuracy. A number of pictures (by means of the lantern) were then shown to illustrate the methods employed and results obtained in the prosecution of Mr. Muybridge's work. Mr. Mason said a high tribute was due to the University of Pennsylvania for the liberal support it had given to a subject which would raise its standing in the estimation of lovers of progress far above the point that could be reached by the expenditure of a like amount in any of the ordinary educational methods.

This work would be an enduring monument to the energy and perseverance of the photographer—the capability of his methods for the discovery of facts in new fields of investigation, and to the liberality of a great educational institution whose fostering care had been so nobly extended.

The pictures illustrating animals in motion proved highly entertaining to the audience and were greeted with enthusiastic applause.

Mr. A. D. Fisk exhibited a series of slides entitled, "Low Life in New York City and on Blackwell's Island," at the same time illustrating the different degrees of sharpness attainable by contact printing and by making the transparencies by the wet plate process in the camera.

The same negative printed from by contact and in the camera, showed a marked difference in clearness, brilliancy and force; and this difference decidedly in favor of the camera.

Mr. Fisk contended, that with the camera, greater sharpness could be obtained, and in his judgment, therefore was to be preferred. The slides he exhibited and discribed attracted the greatest attention and awakened the curiosity of many to see and know something of the slums of New York, who could, perhaps, never be persuaded to visit these haunts of vice and crime stripped of all idealism, and seen only in their repulsive reality.

President NEWTON also exhibited a number of slides to illustrate different modes of development and to further demonstrate his ideal of how the most artistic results could be obtained.

Several excellent slides were next exhibited by Mr. Charles Ehrmann, entitled "Records of the March Blizzard in New York City, 1888." The large audience present notably expressed their pleasure in thus seeing in a permanent form, tremendous snow-piles, barricaded streets and the wire web of our electrical spiders beautifully adorned with the universal emblem of purity.

Mr. H. G. Brogfeldt exhibited and explained a safe, simple and effective device for igniting photographic flash powder and demonstrated its practicability with examples of flash-light portraits, both single and in groups.

It now being announced by the President that the hour of closing had arrived, on motion of R. H. Shannon the section adjourned.

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

A STATED meeting of the society was held Wednesday evening, March 7, 1888, with the *President*, Mr. FREDERIC GRAFF, in the chair.

The Committee on Membership reported the election of the following active members: William W. Noble, William Struthers, Jr., Thomas Hockley, Richard B. Irwin, Richard A. M. Deeley, Alexander Hemsley, John H. Dingee, James N. Whelen.

The Committee on Lantern Exhibition reported that an exhibition of lantern slides from the work of members was held at Association Hall on the evening of January 11th. 164 slides were shown, contributed by 52 members. The committee considered the collection as the best yet shown by the society, giving evidence of great improvement both artistically and technically, and much interest was shown in it by the general public.

The Committee on Lantern Slide Interchange reported that it had received and exhibited the slides sent by the Society of Amateur Photographers of New York and the Boston Camera Club, and had now on hand to be shown, those from the Brooklyn Camera Club and the 200 sent by the Camera Club of London, a selection from which would be shown at the conversational meeting, March 21st.

In response to a call made by Mr. George Bullock, of Cincinnati, representatives from the various societies in the Interchange held a conference at the room of this society on Monday, February 20, 1888.

The conference adopted regulations for the organization of the American Lantern Slide Interchange, a copy of which appeared in BULLETIN, March 10.

The committee suggested that a delegate be elected at this meeting to represent the society in the Board of Directors.

The report was accepted and the committee discharged with thanks.

The proposed regulations for the Lantern Slide Interchange were then taken up for consideration. Mr. Coates made the objection that no limit was provided to the assessments which might be made on the various societies.

Mr. Carbutt stated that according to his recollection the size agreed upon for the diagonal of the mat opening was 3⅝ inches, instead of 4⅛ inches as given in the report. This was corroborated by several members who had been present at the conference.

On motion of Dr. Howe the regulations were approved and adopted by the society, with the proviso that they be so modified that the various societies shall not be assessed over twenty dollars during any one year beginning March 1st, and that the size of diagonal allowable for mat openings be corrected to 3⅝ inches.

On motion of Mr. Browne, Mr. W. H. Rau was appointed to represent the society as one of the Board of Directors of the Interchange.

Mr. Joseph H. Burroughs exhibited two of the new Welsbach Incandescent Gas Burners, which were described at the January meeting. The mantles were those intended to produce a white light, which is best adapted for photographic use. Mr. Burroughs also showed some negatives and lantern slides made by means of this light. The negatives were copies of engravings, made with an exposure of two minutes. Two burners were placed, one at each side of the camera, as close to the engraving as possible without allowing the light to shine directly in the lens. Reflectors were used to concentrate the light on the picture. The stop used was about $\frac{f}{30}$. For the lantern slides made from these negatives an exposure of five minutes was given, with $\frac{f}{16}$ stop on Carbutt's A 12 lantern plates. Hydroquinone developer was used. The lights shown attracted great interest from the members, and many questions were asked about them. It was stated that the mantles had stood a test of over 1,000 hours. The lights shown were not of the most approved form made by the company. Those now being made, and which will soon be placed on the market, are very much more powerful. They will be made in various sizes suitable for different purposes.

Mr. Bell showed a piece of ruby glass prepared by himself from a formula which would prove valuable to photographers so situated that the regular article could not be obtained.

150 grains of Heinrich's gelatine is dissolved in 6 ounces water, and 3 grains chloride ammonium added. To this is added a solution of 30 grains of nitrate of silver in ½ ounce water. A cleaned piece of glass is warmed and coated with the gelatine solution at a temperature of 100 degrees F. One ounce of the emulsion is sufficient for a 10 x 12 plate. After coating place the glass on a level marble slab or glass plate to set and dry. When dry expose to sunlight and the color will change to a beautiful orange ruby exactly suitable for dark-room illumination.

Mr. Wood referred to a recent statement by President Walker, of the Society of Amateur Photographers of New York, to the effect that the shape of the diaphragm opening, whether round or square, made no difference in the resulting picture. He showed some figure pictures in which the background was out of focus. The usual round spots of light in the background were square in the pictures shown, this being the shape of the diaphragm opening in the Hoover shutter used in making the exposure.

Mr. Wood also showed two instantaneous pictures made, one during a rain storm and one when snow was falling. Both were quite successful, but neither the falling raindrops nor snowflakes appeared in the prints shown.

Adjourned. ROBERT S. REDFIELD,
Secretary.

PHOTOGRAPHIC SECTION OF THE ROCHESTER ACADEMY OF SCIENCE.

REGULAR MEETING, MARCH 27, 1888.

President CROUGHTON in the chair.

The programme for the evening was a demonstration of the toning of albumen paper—both the ready sensitized and the other kind—by C. F. HOVEY. This popular subject, as well as the known experience of the demonstrator, called forth a crowd. The demonstration was conducted in a masterly manner, and the carbonate of soda toning bath used by Mr. Hovey gave the finest of tones. This bath is one of the simplest, and is used by many professionals. It is merely a sufficient amount of water made alkaline with carbonate of soda, and the required amount of gold to tone added.

President CROUGHTON also produced a lime toning bath, which worked well. The members were sorry to hear that one of their number, C. A. Guebelle, was obliged to go west on account of his health.

They are "positive" that when he is free from the "restraint" of eastern life and under the "developing" influence of the western air he will recover his former "tone" and will return "strengthened" in all "details."

Next meeting, Tuesday evening, April 10th, we will hold our second lantern slide exhibition of the season at the society's hall in Reynolds' Arcade. Visitors cordially welcomed.

THE REGULAR MEETING of the section, Tuesday evening, April 10th, included the second complimentary lantern exhibition given by the section to their friends. In spite of bad weather a large and select audience gathered to see what was to be seen, and, judging from the remarks heard at the close of the exhibition, a better satisfied audience never left the hall. Owing to the absence of President Croughton the Secretary explained the views to the audience.

The first were views made by Herbert H. Spencer, and, considering they represented his first attempt, were pretty good. Next came some views obtained by Secretary Punnett, among which were a number of drop-shutter yachting views; one of Cornell University, and a view taken from the cross-trees of a schooner. The views of C. F. Hovey, which followed, were among the best, if not the best, of the evening. The most notable were views of Niagara Falls in winter, and were made on wet plates. In one in particular, the sparkle of the ice appeared so natural that it almost lent a chill to the room, and was praised by all. His views of the coast of Maine were also fine, as well as one of the hill, near Palmyra, N. Y., where Joseph Smith claimed to have found the plates of the Mormon Bible.

Mr. Lee, one of Rochester's leading photographers, contributed some excellent views of Palmyra Creek, made on wet plates. It is not necessary to dilate on the peculiar good qualities of the slides furnished by Mr. J. E. Dumont, it being sufficient to say that they sustained his good reputation.

The last scenes of all that closed this strange eventful history, were some commercial views, furnished by E. E. Bausch & Son, and the bright colors and comical pictures enticed the laughter of the older as well as of the younger people.

To Messrs. Bausch & Son we are indebted for the use of the finest and most costly oxy-hydrogen lantern in the city. Too much credit cannot be given to Mr. H. W. Mathews, the active member of the Committee of Arrangements. The subject for next meeting has not yet been announced.

Yours truly,
MILTON B. PUNNETT.
Secretary.

ST. LOUIS CAMERA CLUB.

St. Louis, March 20, 1888.

The regular meeting was called to order by *President* Bain, with thirteen members present.

The minutes of March 6, 1888, were read, and approved as read.

The Membership Committee reported favorably on the application of Edmund E. Wickham for active membership. On ballot, he was elected, and the *Secretary* was instructed to notify him thereof.

Applications for active membership was received from Charles Tilden, George T. Martinez, Henry L. Bailey, Sidney A. Aler, and were referred to the Membership Committee for investigation.

The paper of the evening was read by Mr. Gray Staunton, being "An Account of a Recent Trip to Havana."

On motion of Mr. Butler, the ratification of the Constitution of the American Lantern Slide Interchange, as done at the last regular meeting, was reconsidered. The *Secretary* read several letters from the Boston Camera Club, announcing their unqualified rejection of the Constitution. Considerable discussion followed. It was finally decided to ratify the Constitution of the Interchange, *after* the following changes were made:

(1.) The rule which empowers the Executive Committee to designate a topic or text for illustration, shall be stricken out *in toto.*

(2.) Slides shall be marked as follows: The subject-name may be placed at *either* end of the slide, and a thumb label containing the invoice number, shall be placed at the lower left-hand corner. A suitable label shall be attached to each slide, giving a brief description of the processes employed in making negative and slide.

(3.) That the rule in regard to negative and slide shall be amended so as to read: No slide shall be accepted for the Interchange which is not actually made by the Club member whose name it bears.

(4.) That the managers be required to submit to each club, at the end of the year, an itemized account of his receipts and expenses.

On motion of Mr. Butler, the Constitution of the Interchange was then ratified *as amended*, and the *Secretary* was instructed to so notify Mr. George Bullock, of the Cincinnati Camera Club, the temporary manager of the Interchange, and also the Boston Camera Club.

Mr. Blair, of the Blair Camera Company, exhibited two cameras, of the model of 1888, which were much admired by the members.

The slides of the Society of Amateur Photographers of New York were then exhibited to the members present.

There being no further business, the Club adjourned until Tuesday, April 3, 1888, at 8 P.M., when the annual election of officers will take place.

The regular meeting of the club, April 3d, was called to order by *President* Bain, sixteen members being present.

The minutes of March 20th were read and approved as read.

On recommendation of the Membership Committee, Messrs. Harry S. Bailey, George D. Martinez and Charles Tilden were elected active members, and the Secretary was directed to notify these gentlemen.

Having given notice at the last meeting Mr. Dubois moved to strike out the last five lines of Section 1. Article III, of the Constitution, fixing the salary of the Secretary and Treasurer at $100 per year, and requiring him to give bond in a suitable sum, and insert in lieu thereof the following words:

"He shall be exempt from the payment of all dues and assessments during his term of office." The amendment was unanimously adopted:

The annual reports of the President, Secretary and Treasurer, Executive, Lantern Slide and Membership Committees were read for the information of the club.

On motion of Mr. Wilcox, it was ordered that one hundred copies of the annual reports of the officers should be printed for circulation.

On motion of Mr. Alexander, it was ordered that five hundred copies of blank forms of applications for membership be printed for further use.

On motion of Mr. Blattner, it was ordered that a list of members and officers elect should be printed with the annual reports.

On motion of Mr. Wilcox, it was ordered that the Secretary ascertain the cost of renting a place for the use of the club and report at the next meeting.

The Lantern Slide Committee reported that they had carefully examined the slides of the Society of Amateur Photographers of New York and find them inferior to those sent last year; they therefore would not recommend a public exhibition of these slides.

The annual election of officers was next in order.

The following are the officers of the St. Louis Camera Club for the year ending March 31, 1889:

President, Robert E. M. Bain, 515 Pine street; Vice-President, Rev. Charles M. Charropin, S. J. St. Louis University; Secretary and Treasurer, William M. Butler, 2636 Osage street.

Executive Committee.—Eliot C. Jewett, U. S. Assayer; John W. Dunn, 3418 Maramec street; Charles M. Alexander, 221 Custom House.

Lantern Slide Committee.—H. B. Alexander, Chairman, St. Louis National Bank; A. P. Erker, 617 Olive street; Henry Blattner, 220 N. 4th street.

House Committee.—John F. Vallé, Chairman, 5 Benton place; Charles H. Holland, Care Water Commissioner; Edward Massot, 1012 S. 4th street.

Membership Committee.—Walter H. Wilcox, Chairman, Lyon School; Charles W. Melcher, 811 N. 2d street; C. Louis Hammerstein, 700 Chestnut street.

Official inquiries should be directed, in all cases, to the proper officers.

There being no further business, the club adjourned to meet on Tuesday, April 17th, at 8 P.M.

William M. Butler,
Secretary.

TEXAS STATE PHOTOGRAPHERS' ASSOCIATION.

The second Semi-annual Convention will convene in the City of Waco, Texas, on Thursday, June 7th, and will remain in session two days, or longer, if judged advisable by the convention.

W. D. Jackson, local Vice-President, has charge of the local arrangements and will use his best endeavors to provide all things necessary for the success of the convention and the pleasure and comfort of all who may attend. The Executive Committee, appointed by the association at the convention held in Dallas, November, 1887, and charged with the arrangement of the details for the next session, have met and set the time as above.

It is hoped that every photographer within the limits of the State of Texas will take an active interest in making this association, now in its infancy, a complete success. The object of the association is for the promotion of fraternal feelings among the craft, stimulation to excel in producing good work and an interchange of ideas and modes of operations; and if heartily co-operated in by the craft, will, no doubt, redound to the good of the many. To this end every photographer is invited and especially urged to be present at Waco, and also to make an exhibit of his work at that time and place.

The committee decided that as this was an association of photographers, only photographic pictures would be received on exhibition. That is, all pictures made directly by the action of light and chemicals. This excludes all brush or pencil work on the finished picture, but does not exclude what is known as retouching the negative.

Each exhibitor is privileged to make a display of not less than six, nor more than twenty-four, pictures which may be of any size, and may be put up or arranged in any form suitable for display, with frames, or without frames, except that no display shall be covered with glass. This is to avoid extra expense in shipping and handling and is alike fair to all.

All exhibits should be expressed prepaid, and marked:

For Exhibit
W. D. Jackson.
from
Waco, Texas.

and should reach Waco not later than Tuesday, June 5th, or may be brought in person by the exhibitor if taken to the Exposition Hall and placed in position by 12 M. of June 7th. The hall will be opened at 9 A. M. and the first business session will convene at 2.30 P. M., June 7th, at which time the further programme will be arranged. Vice President Jackson requests that all who intend to be present or to make an exhibit notify the Chairman of the Executive Committee, namely, S. T. Blessing, Dallas, Texas, of their intention not later than May 10th, so that he may know how many to provide for and what size hall will be necessary. He can and will make arrangements at one, or more, hotels for the visitors to stop in a body, and at reduced rates—one or two dollars a day—write if you desire such an arrangement. Also, if we have a goodly number of such notifications we can procure from the railroad company reduced rates of fare, so don't fail to write so that we may know how many to expect.

The Constitution and By-Laws adopted at the Dallas convention is now in press and will be ready for distribution by April 20th. It is desired to place one in the hands of each photographer in the State. If you do not receive one by May 1st, write for it. Address S. T. Blessing, as above.

Again earnestly urging every photographer in the State to regard this association as his pet and work for its success, and especially to be present at Waco, we, the Executive Committee, respectfully submit the above as the work of our deliberations, and trust it will meet with the hearty co-operation of the association.

S. T. BLESSING.
J. N. CARADINE.
JOHN SWARTZ.

THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

REGULAR MEETING, JANUARY 10, 1888.

(Continued.)

Mr. CANFIELD—*Mr. Chairman:* Suppose an amendment is introduced by a member who is not a member of the Board of Directors? That is not necessarily brought before the club. It seems to me it should be provided, in some way, that any amendment is entitled to consideration by the members of the club. In all these provisions the members of this society, or the club I should say, are the controlling power, it seems to me. The Directors are empowered as directors to carry out in concise form the rules and regulations of the society. Now, for the Board of Directors to pass on points which really belong to the club as a whole to consider, it seems to me is not quite the way to do it.

Dr. PIFFARD—The gentleman is, I think, laboring under a misapprehension. The present Constitution requires that any proposed alteration or amendment shall be first submitted to the Board of Directors by whom it must be adopted by a two-thirds vote before it can come to the society.

Mr. CANFIELD—That is exactly the point. By that means eight people who are opposed to an amendment could prevent its consideration by the society.

Dr. PIFFARD—That is omitted from this, "Any proposed alteration or addition to this Constitution shall first be submitted to the Board of Directors who shall report to the members of the society."

Mr. CANFIELD—I withdraw my motion.

Article VI of Dr. Piffard's proposed constitution was read again, and was on motion adopted.

Dr. PIFFARD—I now move the adoption of this Constitution as a whole.

Motion seconded.

A *Member*—I move that a vote be taken by roll call.

Dr. PIFFARD—I object, sir. It cannot be done in a committee of the whole.

The *Chairman*—I would like to suggest that the whole Constitution be read over again.

Dr. Piffard again read his proposed constitution over, and renewed his motion for the adoption of it as a whole.

The motion was seconded, put and carried.

Dr. PIFFARD—I hold in my hand a paper entitled "Proposed Amendments to the By-Laws."

Mr. Williams asked Dr. Piffard to give a brief sketch of the difference between the proposed By-Laws and the present By-Laws of the society.

Dr. PIFFARD—It has been noticed that the Constitution was shorter than the original one, which is due to the fact that many facts not of a constitutional nature were transferred to the By-Laws. The only changes of importance in the By-Laws that I note, are, first, a transfer of those articles from the Constitution to the By-Laws, and secondly, changing the duties of the officers in some slight respect, and third, making an alteration in the dues, and fourth, in the manner of amending the By-Laws. Those are the chief points of difference.

Dr. Piffard then read the By-Laws down to the provision in regard to the Records of the Board of Directors, when the following transpired:

A *Member*—I offer the following as an amendment relative to the minutes of the Board of Directors: "That the Record of the Directors shall at all reasonable times be open to inspection to any member of the club."

Mr. CANFIELD—I second the motion.

Dr. PIFFARD—I don't think that is reasonable.

Mr. DEXTER H. WALKER—It seems rather undemocratic that the minutes should not be open to inspection, but there is some good reason for it. There may come a time in the history of the organization when it is in trouble and when its finances are difficult to handle and when a timid man among its membership would be affected if he knew the whole truth, just as a man's credit is affected if he pledged his property in public, or just as a man would be affected if he told his condition to his friends, they would give him the cold shoulder. And as there are timid men in every association it might not be advisable. It would not do us any good, and it may do us some hurt. Therefore, I think that it would be well to keep the business of the Trustees within the Trustees' control. I should favor that view of it.

Cries of "Question," "Question."

The *Chairman*—An amendment has been offered that the Records of the Board of Directors be open to the inspection of the members. All in favor of that amendment will signify the same by saying aye; contrary, no.

Amendment lost.

Dr. Piffard continued reading his amendments down to the section regarding dues, when the following discussion was had:

Mr. CANFIELD—What is the object of increasing the dues?

Dr. PIFFARD—Because those who have charge of the finances of the club have stated publicly and privately that the present dues are insufficient to enable the club to be kept in a suitable and proper manner. I have no further information than that which I have given.

Mr. CANFIELD—I do not think, Mr. Chairman, that we are in possession of all the facts of the case, on account of our not having a report of the Treasurer since the last annual meeting, to enable us to deal intelligently with this question. Now, I do not know whether it will create any feeling or not on the subject, for me to state that I have seen a copy of the statement made according to law by the Board of Directors on January 1st, under the act of incorporation, and by that report it would seem as if we needed to raise the dues. I do not know how or why or anything about that; but the point is simply this, that if the dues are to be raised for the benefit of the whole society, then let them be raised and I shall vote heartily. If, however, the dues are to be raised and the money thus additionally obtained be expended for the use and behoof of a small portion of the membership as, for instance, unnecessary and radically expensive changes in the dark room, or in investments, or anything of that sort, then I think the increase should not be granted. That is the position that I take in regard to it.

The *Chairman*—Is there anything further on the subject of the annual dues?

Mr. BEACH—I move to amend that by making the annual dues $10 a year instead of $15.

Mr. STEBBINS—I second it.

Dr. PIFFARD—I would like to ask the Directors or the Treasurer, if he is here, or the President, as to the necessity or otherwise of increasing the dues. I do not know anything about it of my own knowledge. I know there are lots of things we ought to have upstairs, Mr. Chairman, and that we have not got them, and have not the money to buy them with. For instance, we ought to have a camera stand and a great many other things we have not got.

Mr. DEXTER H. WALKER—The question is put to me and I intend to answer it very briefly. Perhaps at some future time I will enter into a more elaborate discussion of the question, but now it is enough for me to say that the object of raising the dues is not to pay our current expenses, nor to pay bills which we owe, or anything of that sort, but to enable us to put aside some fund in order that we may be in time in a position to improve our quarters by moving elsewhere when that necessity comes or our numbers increase to such an extent that we will not be able to remain here for want of suitable accommodations. It will cost a good deal more than the present average expenditure, and we therefore want to put aside a fund for that purpose. That is the object in raising the dues to $15 per annum. We have no other object that I am aware of.

Mr. CANFIELD—*Mr. Chairman:* I have one or two remarks that I wish to make on that subject. In the first place, I agree heartily that a surplus or a sinking fund in some way should be laid aside, but it seems to me that object would be better gained by making a certain or definite portion of the annual dues, whatever they are, apply to the sinking fund.

And a certain other amount go for the annual dues, and I further submit that we are not in a position to judge of the necessity or advisability of making a change on this point until after our next annual meeting, when we have had the Treasurer's report submitted to us. If we like the By-Laws that are still in force, making the dues $10, to remain, I certainly would be willing to pay my share of what the increased dues would be if it is necessary to carry the society through until the next annual meeting, but I should prefer, before making any changes, to wait until the annual meeting.

Mr. DEXTER H. WALKER—I ought to say, if the Chairman will permit me, that the trustees have had under consideration the project of setting aside a fixed amount of this additional income for the purpose I have mentioned. The trustees have considered that question, and have thought they would set aside a portion of that increase, or even the whole of the increase. The Board of Trustees have always heretofore had the fixing of dues in their control. It was done by the old Board, and they never consulted the members on the question at all. I cannot see why the present Board cannot be trusted with it. They have conducted this society successfully so far, and they have increased the membership and the facilities, and those things have cost money, and it cannot be done without money, and so long as we do not run into debt, as long as we do not put you in position where we shall have to call on you for money to help us out of our difficulty, you ought not to complain; therefore I ask you, gentlemen, to pass on that amendment, leaving it as it is, and trusting your Board of Trustees, who will take every care and every precaution to protect you in the future as they have in the past.

A *Member*—What effect would that have on young men of small means who could perhaps raise the $10, but who could not raise the $15? Would not you lose more in that way than if you leave it at $10?

Mr. DEXTER H. WALKER—We have considered that question, of course. It would be folly not to consider it, and we have considered it on the broad ground as to the general benefit, not as to the benefit of the young men, but as to the general benefit of the whole society. This society is not organized for any class except for that of amateur photographers, and I am happy to say that there are a great many gray hairs engaged in that pursuit, and young men, while they may be welcome here, we had better put them on some other basis if they be not of age or not in business, or have some provision under which they can enter here at a reduced rate of admission. Let us provide for them in some way, but for Heaven's sake give us enough money to pay our way. This society has been in debt before, and the members of the Board have had to put their hands in their pockets to help it out. It is not a pleasant thing to be in debt. The membership certificates which you mentioned to-night were issued for the purpose of helping us out of debt, and that was the very worst thing we could do.

Mr. CANFIELD—But the membership certificates were not used in the way in which they were intended to be used. When the membership certificates were issued it was supposed the annual dues of the members would be used only for the expenses of the club, and that the initiation fees would not be drawn upon. Now, I don't wish to be criticising the action of the Board of Directors. But I simply wish to say that the tendency of this society (at least it was the tendency at the time I was a Director I know) was not to cut our garments according to our cloth.

Mr. DEXTER H. WALKER—The gentleman may wish to be considered as not reflecting upon the Board, but from my standpoint it cannot be so considered, or rather, it must be considered as reflecting upon the Board. The whole of the gentleman's remarks—

Dr. PIFFARD—I rise to a point of order. The last two gentlemen who have spoken have not spoken on the question at all.

The *Chairman*—The motion as made is that he fees be made $10.

Dr. PIFFARD—It is very clear to all who come here, that before long, in another year, certainly two years, but probably in one year from now, we will have to move from here, because the accommodations will be insufficient for us. The mere moving and fitting up of other rooms will cost a very considerable sum of money, and I propose to provide for that money in advance in these By-Laws, instead of waiting until the time comes and then let the society run into debt, and let the Directors put their hands in their own pockets and pay it, and therefore I decline to accept the amendment offered by Mr. Beach, and I call for the question.

Mr. CANFIELD—It seems to me without a condition to the article as presented, which guarantees that a certain amount shall be put into the sinking fund, that we have no guarantee that the income of the society shall not be devoted to other purposes.

Dr. PIFFARD—That I have no objection to.

The *Chairman*—That had better be in a separate resolution.

The motion made to keep the dues of the society at $10 per annum was put and lost.

Dr. Piffard then finished the reading of the By-Laws and moved their adoption as a whole.

Mr. CANFIELD—In our present Constitution there is no method of removing a Director or other officer for neglect of duty, and it is a question whether or not that shall be a prerogative of the club.

Dr. PIFFARD—That is something that I do not like to put in the By-Laws. I think sufficient moral influence can be brought to bear on him to resign if he neglects his duty. I have no objection to it, only the insertion of such a provision as that in the Constitution or By-Laws gives it a disagreeable appearance.

The *Chairman*—Do you want an amendment of that kind in the By-Laws?

A motion was then made that a provision of that sort should be made in the By-Laws. Motion put and carried.

Dr. PIFFARD—I move the adoption of the following: "Any officer or Director may be removed from office upon trial for and conviction of continual neglect of duty or violation of the rules of the society, by a vote of not less than two-thirds of the whole number of active members present and voting, after due notice being given to him for an opportunity for him to be heard in his defense."

Motion carried.

Dr. PIFFARD—I move you, sir, that the By-Laws, as amended, be recommended for adoption.

Motion carried.

Dr. PIFFARD—I move that the committee rise.

Motion seconded and carried.

At this point Mr. NEWTON then left the chair.

The *President* resumes the chair.

Dr. PIFFARD—Mr. *President*: I call for the report of the committee of the whole.

The *President*—Has the Chairman of the committee of the whole, anything to report?

Mr. NEWTON—Mr. *Chairman*: I have to report the adoption of the resolutions recommending to the society the Constitution and By-Laws which you have heard read and discussed here this evening.

Dr. PIFFARD—I move that the report be received and the recommendations be adopted.

A *Member*—I move that it be adopted by taking up the first section first.

Dr. PIFFARD—I accept the suggestion.

The motion to change the name of the society to the New York Camera Club was put to a vote and lost. Tellers reporting 27 affirmative, 19 negative, total 46 votes, of which 31 are required to adopt.

Dr. PIFFARD—I move the adoption of the remainder of the committee's report.

Mr. CANFIELD—I second the motion.

The *President*—I want to say that several gentlemen have contributed towards a Beck portrait lens, with iris diaphragm, for the use of the members, to be placed in the Room up-stairs, and I will give you their names, in order that you may know who they are. H. G. Piffard, R. M. Fuller, W. E. Bond, Dexter H. Walker, Richard H. Lawrence, R. H. Lamborne, H. V. Parsell, George R. Allerton, R. B. Roosevelt, C. C. Roumage, Jr., and Daniel P. Read. And I will also say that we are indebted to Mr. Grisdale for twenty-one brass forms for making mats for lantern slides, and a Robinson trimmer and a printing frame in connection therewith. Mr. Dumont presents us with ten lantern slides, and Mr. Leaming has presented us with a letter press and the accompaniments.

On motion of Mr. Canfield, a vote of thanks was tendered to the gentlemen for these presents.

On motion, the meeting adjourned.

MARRIAGE.

McPHERSON — RIPPBERGER.—March 14, 1888, by the Rev. H. J. Frothingham, at Oregon, Illinois, Miss Hattie McPherson to Frank Rippberger, the well-known Photographer of that place. We join with many friends in wishing the happy couple the choicest blessings of life.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

Q.—J. G. C. writes: 1. How do plate makers produce different degrees of sensitiveness in their plates? 2. How much chrome alum should I use, say, for 20 ounces of emulsion? About three months ago I made some 5 x 8 transparencies and not having sufficient ground glass I took a dry plate, one out of a lot I discarded because they were fogged slightly in manufacture; the plate was exposed to daylight before mounting with the transparency, yet, a few days ago, I noticed the transparency had become so dense it could not be seen readily. I took the dry plate out and inserted a ground glass—this I did in the evening; next morning I noticed that there was a finely detailed negative of the transparency on the dry plate and fully developed. I fixed it; and had the contact been perfect between the transparency and the dry plate the negative would have been sharp; and, to my surprise, the negative was one of unusual clearness, not a particle of fog, yet a little thin for a good, vigorous print. Can you explain how it is, or have you ever had anything of the kind brought to your notice? I have been in this business nearly twenty years and have never seen or heard of such a freak. Should you want further particulars write me or request through your journal. Will send negative, if necessary.

A.—The sensitiveness of dry plates is produced by more or less time used in boiling the emulsion, or by the use of ammonia. See Dr. Eder's Book on "Modern Dry Plates" issued by our publishers; there you will find a very complete discussion of the question of sensitiveness as applied to gelatino-bromide emulsion making. We do not know how much chrome alum is generally used in an emulsion. We presume you mean to use it to prevent frilling; but it slows the emulsion. We believe Eder's book also discusses this question; a few grains in the ounce of emulsion has a very important effect.

Q.—J. F. L. writes: Will the BULLETIN please answer the following: Is there such a thing as a photometer for determining the varying strength of light in a gallery, so that one can correctly time the exposure? One who is pretty constantly at work may generally be able to give the proper time; but making negatives at considerable intervals he will lose a good deal of time and material in experiment.

A.—There are quite a number of forms of photometer used to determine the actinic power of light for photography. One of the best of these is that devised by Dr. H. W. Vogel, and consists of a box with partitions, the covers of which partitions contain a series of graduated openings, letting in more or less light. You will find it described in "Vogel's Progress of Photography." We cannot give a good description of it here without drawings. It is the best photometer we know of to-day although there are several new ones recently brought out.

Q.—T. F. L. writes: We are troubled with our paper reddening while burnishing. What is the reason? We are not troubled that way all the time; only by spells. Lately it takes our paper two hours to fume so that it will not print red and formerly it only took from 20 to 30 minutes. What is the reason? We have fused our silver bath and use it from 60 to 70 grains strong and slightly alkaline, floating from 2½ to 3 minutes. We use N. P. A. and Eagle paper with the same effect. We use bicarbonate of soda in the toning bath. The tones are fine until we burnish.

A.—It appears to us that you must be using some compound to clean your burnisher that contains some acid or other like material. Be sure that you do not use oxalic acid or anything of that kind to clean the burnisher; it is almost impossible to get rid of such material from the surface of metals. Polish the burnisher with flour emery and clean water, nothing else. It will take a little more muscular exercise than some other ways, but it is best in the long run. If you are still troubled this way, clean the burnisher with weak ammonia and emery flour, and then you can keep it clean with emery and water alone.

Q.—F. H. writes: I find, on reading your answer to my question in regard to toning albumen prints with chloride of platina, that I failed to make myself understood. I wished to know if carbonate, phosphate, etc., of soda could be used instead of the acetate, and to get the formula if there was one in use. I have tried the platina several times but could not make it give me any other tone than a rather sickly brown. It did not act as gold does in the bath. I consulted Vol. 18, No. 6, of the BULLETIN, as directed, but got no light from that article, as that was for bromide prints by development. I used about double the quantity of platina that I do of gold, and made alkaline as usual. The prints seem to clear well but not tone. Why does it refuse to do the latter? If you will give me the proper formula, from printing to fixing, you will do me a great favor.

A.—In toning with platinum, it is best to use a mixture of acetate and bicarbonate or phosphate of soda. You can use any formula given for a gold solution that contains these alkalies, but use about double the quantity of platinic chloride, and have the toning bath about 90 to 100 degrees F. Print very deep.

Q.—Amateur writes: Will you kindly tell me, through the columns of the BULLETIN, a reliable way to coat paper with a gelatine emulsion? I am trying to make some chloride of silver paper for printing out, but have, so far, failed to get an even coating on the paper. I float a minute on hot emulsion, then lay on level glass to set.

A.—Coating paper with emulsion is by no means an easy operation. One of the best ways is to draw the surface of the paper over the emulsion surface so that it just touches the gelatino-bromide, using both hands; that is to say, take a sheet of paper and beginning with the edge in the right hand dip on to the surface of the emulsion for an inch or so, and then let the paper from the left hand slowly touch the emulsion, at the same time raising the right hand to withdraw that already dipped.

Q.—J. B. M. writes: How can I dissolve lime for use with the hydroquinone developer?

A.—Take a piece of good quick-lime (good shell lime is best), and having slaked it by adding water, put it in a bottle and thoroughly shake the milky mixture. Use a piece of lime about the size of an egg to mix with about half a gallon of water. This will give you the lime water you need if you carefully pour off after allowing to settle.

Q.—C. M. P. writes: On page 86 of the "British Almanac" for 1886, is a paper entitled "A Rambling Retrospect," by W. T. F. M. Ingall. In this paper the writer states that "hypo potassium" has great advantages over hyposulphite of soda both for negatives and prints in requiring less time for fixing and far less time for the final washing, but he adds that the cost is too great to allow it to take the place of the latter at present. As I cannot find any chemical now sold of such name, I write to ask whether sulphide or sulphuret of potassium would answer the same purpose, and if so what would be the proper proportions. Can you aid me in this?

A.—Potassium hyposulphite can be obtained from Messrs. Eimer & Amend, 18th street and Third avenue, New York, but it is about fifty times more expensive than the corresponding sodium compound. You cannot use the sulphide or sulphuret of potassium; that is a totally different compound.

Q.—W. D. C. writes: Is it considered a good way in silvering paper to place the sheet in blotters to absorb the surplus silver and afterwards dry by a gentle heat? Please write me and also write what is now considered the best way of silvering paper, and do they use an acid or alkaline bath? I will be greatly obliged to you for the information.

A.—There are many printers who use blotting paper to dry off the surplus silver solution after sensitizing their paper. But great care has to be taken that the blotters are clean and pure paper. When blotters are used these are burnt after a time and the silver saved. We prefer to sensitize and then draw the sheets over a clean glass rod to remove the surplus. The best formula for printing that we know of is O'Neil's. See BULLETIN, page .

Views Caught with the Drop Shutter.

JAMES W. QUENN & Co., of Philadelphia, have started a new photographic publication, entitled "Science of Photography." It is well edited and promises to be a valuable addition to photographic literature.

A TESTIMONIAL was recently given to Miss Della the daughter of Mr. Fox, one of the oldest photographers in St. Louis. Among those who contributed to this pleasant affair we note the following: Mrs. Fitzgibbon-Clark, J. C. Somerville, G. Cramer, M. A. Seed Dry Plate Co.; W. H. H. Clark, H. A. Hyatt, F. W. Guerin, L. F. Hammer, J. C. Strauss, J. A. Scholten, I. M. Mead, Robert Benecke, Kuhn Bros., and others. Miss Eox leaves for Europe soon to finish her musical studies.

BUCHANAN, BROMLEY & Co., of Philadelphia, send us a picture made with their violet flash compound. It is certainly very good, and shows what can now be done without sunlight and with the aid of our modern rapid dry plates.

J. B. SCHWARTZ & SONS, of New York, send us their list of charges for mounting and printing photographs for amateurs. They appear very reasonable, and our amateur friends should give them a trial.

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ANTHONY'S
Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

MAY 12, 1888.

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PHOTOGRAPHIC WORK IN SUMMER.

At the beginning of cold weather each winter we are called upon to answer numerous letters complaining of difficulties incidental to low temperature in the atmosphere, such as crystallization of developers, mottling and blisters on albumen paper, and such like ills that photography is heir to in winter. In the late spring and early summer we are again called upon to answer another set of questions involving difficulties that arise from increase of light, and a high temperature in the atmosphere. These difficulties are first, thin negatives from over-exposure, second, too intense negatives from too rapid development, and thirdly, frilling from too warm and too strong solutions.

The first of the evils mentioned above is more commonly encountered by amateurs; the experience of professional photographers leads them to avoid the results due to over-exposure. But even professional photographers sometimes get a misleading idea of the value of light in the summer days, and when using our modern rapid dry plates. It is truly marvelous what a very slight amount of light will do with the ever-increasing rapidity to be found in the dry plates being made to-day. To the amateur we would suggest, as one of his first series of experiments, a set of exposures upon the same subject, using one lens and giving the same amount of time; but with a diaphragm opening that is gradually increased from the smallest to the largest stop in his lens. When he has made such a series of exposures, each plate marked with the number of the diaphragm used, he will find one or more of these plates that give negatives that are good; of course using a uniform developer and the same manner of development. Having found the right diaphragm to use for that kind of dry plate, and with a careful note of the kind of light at his disposal on the day he made the exposures, he is prepared to form a judgment of the exposure necessary for similar plates upon another occasion. It is best to judge the light from the image upon the ground glass rather than a view of the objects outside; and remember that dark foliage and views on land give much weaker impressions upon the dry plate than views upon the water. This latter point is often forgotten by beginners in taking instantaneous pictures; they see a very pretty water picture taken instantaneously, and think it is just as easy to get a view of a group seated under some shady trees, when in the latter case very much more of that quality of

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light is necessary to affect the dry plate than in the case of a water view. A box of 4 x 5 plates used for such a series of experiments will teach more than volumes of words, and save many disappointments.

But the question of over-exposure with rapid plates in summer involves other considerations. In summer the sunlight is much more powerful than in winter, and the hours when this light is good range over a longer period of the day. Furthermore, the temperature of the developer in summer makes it more active and consequently many plates are lost from this cause. One way to overcome this difficulty is to dilute the developer, or use less alkali in it than is necessary in winter. The over-exposure which gives thin negatives is due to the use of diaphragms that are too large when the light is good.

Negatives that are too intense come from exposures that have been developed too long, or with too active a developer. This activity of the developer is a point not often remembered. In winter a certain formula works well, and as summer approaches the same formula is used, the negatives becoming more and more intense. This is due to the fact that the activity of the developer increases with the temperature, and the difficulty of too intense negatives may be overcome either by using less alkali or diluting the developer with water. In other words, as the weather gets warmer, work more slowly and you will get better results.

The other common difficulty encountered in summer is the frilling of the dry plates during development and fixing. This is due to the use of warm solutions, and also depends upon the kind of developer used. With ferrous oxalate, frilling is not often encountered; but with both soda and potash developers, it often occurs when the solutions are warm. Potash in the developer will cause frilling much more easily than soda, and ammonia can be sometimes used where both soda and potash both cause frilling. If a brand of plates is in use that give trouble from the film leaving the glass, a very good way is to use an alum bath, between the developer and the fixing bath. A bath that we have found very useful in this way consists of a saturated solution of alum mixed with about one-fourth its volume of water, and then made acid with about one dram of hydrochloric acid to the quart of bath. This will nearly always prevent or arrest frilling, and at the same time serves to eliminate any yellow color that may be in the film. from the pyrogallol development. Care should be taken to wash pretty thoroughly after the alum bath and before fixing. Sometimes frilling may be prevented by using less alkali in the developer, or using the developer more dilute. Ice water will also serve the purpose. But the alum bath mentioned above is the best, as it serves two purposes: it prevents frilling and clears the negative.

We have given above some of the difficulties to be met with in photographic work in summer, and the remedies. We hope those of our readers who meet with these troubles will remember what we have said, and thus avoid many disappointments in our art.

EDITORIAL NOTES.

Professor Davidson, of the Coast Survey, contemplates applying photography to the whole line of the Pacific seaboard. He will select stations ten miles or less apart, and views ten to twenty miles broad off shore. The more distant portions of the view will give the landfall and line of the crests of the coast mountains as seen seaward by the navigator. There will also be views of the headlands seen from three points: one when traveling northward, another southward, and the third when abreast of them. The islands will also be photographed from several points of approach. The work will be a long one, but the immense value of such views to navigators is beyond question, and we hope the project will be carried out at an early date.

THE following, taken from an English newspaper dispatch, shows how careful photographers should be when trying to obtain pictures in savage or even semi-civilized countries.

"Gibraltar, May 1.—The British gunboat Falcon has returned from Cape Juby, whither she was sent to investigate the reported attack by a body of the Sultan of Morocco's troops upon the depot of the British African Company at that place. The commander of the Falcon reports that Mr. Morris, manager of the company, attempted to photograph a Moorish camp of seven soldiers, and that while he was adjusting the camera the soldiers brained him. They then attacked and drove his companions into the fort protecting the company's factory."

ONE of the most interesting and valuable communications presented to the photographic section of the American Institute this season was "Relative Intensities of Oxy-hydrogen Jets," by Dr. L. H. Laudy, of the School of Mines. The results obtained in this investigation are very important, and we hope at an early date to give them to our readers in a completed form.

MUCH interest is still taken in the kind of light used in the dark room, and the dark amber glass is still in great favor. We must confess that the light through this medium is much more pleasant than the ruby light used hitherto. Amber light is pleasant to the eye and non-actinic.

A NOVELTY in portraits comes to us in the form of the "Cellulograph." This is really a picture made in the surface of celluloid. It is remarkable for its beauty, and its durability is assured from the fact of its being inclosed in the material upon which it is made. The highly polished and semi-translucent surface gives a character to the portrait we have never seen before; it appears to be imbedded in ivory. Ordinary rubbing of the surface does not injure it; it can be washed and dried with a cloth, and is practically waterproof. The inventor, Mr. C. T. Cain, of Owensboro, Kentucky, assures us that the pictures are easily produced with the chemicals to be found in every studio. They are impervious to atmospheric impurities, and can be made any size and shape you wish. For further information we must refer our readers to Mr. Cain. This invention is a novelty and bids fair to become quite popular owing to the great beauty and permanence of the pictures.

THE ST. LOUIS CAMERA CLUB gave their last public lantern exhibition at University Hall, St. Louis, on Friday, May 4th, when the slides from the London Camera Club were exhibited.

THE BROOKLYN CAMERA CLUB held an inaugural meeting at their new club rooms, 731 Fulton street, and an exhibition of two hundred lantern slides was given. The club has a large dark room, enlarging room, and apparatus for practical work, and bids fair to make its mark among local societies.

Mayall's colored photographs have again come to the front in England, and a large stock company has been organized to work the process. We hope that something more than mere stock-jobbing will result from this, and that our art will be the gainer from the capital invested. If capital advances art, it is well used; but if art is used to make capital alone, art is debased.

The Albany Camera Club is active. Commodore Sanders is fitting up his yacht Scionda, and is going to give the club an outing on the river. Miss Barns of the same club has some notable pictures at the Boston Exhibition. There are only two vacancies in the limited membership of the club.

Newark, New Jersey, has now a regularly organized camera club. The *President* is William A. Halsey, with Theodore T. Keer as *Secretary*. We wish our Newark friends every success.

We have received a number of pictures, but must defer notice of them until our next issue, owing to the crowded condition of our columns. We have received prints from A. M. Costello, J. B. Heyl, I. J. Kuntz and H. B. Snyder.

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

The Hydroquinone Developer—The Action of Double and Single Carbonates of Sodium—Oiling Instead of Varnishing Dry Plates—Testing the Clearness of Lenses.

For some years a good deal has already been experimented and written about hydroquinone developer, but it has not been brought into general use yet. General experimentalists declared it to be too slow, others complained about its changing color too quickly, others, again, maintained that it would stand no potassium bromide, and, in addition to all this, comes the high price. The principal reason why, up to the present time, no results have been obtained with hydroquinone is owing to the impracticable formulas given. Caustic potassa or ammonia was mixed with it. But either of them, with hydroquinone, gave no such good results as pyrogallol. A formula has now been published, originating, I believe, from Sozon, which recommends carbonate of sodium, and I had such excellent results with this formula at the first trial that I caused my son to give it a thorough test under different conditions.

He took—

Solution I.

Hydroquinone	1 grain.
Sulphite soda	5 grains.
Distilled water	68-80 c.c.

Solution II.

Carbonate soda (pure cryst.)	1 grain.
Distilled water	8 c.c.

For development one mixes three parts No. I. with one part of No. II. If the heat of the solution is less than 15 degrees the picture will not appear completely in less than six to eight minutes; if over 15 degrees in two to three minutes.

A developer made after this formula, has the advantage of containing no high price alcohol and no caustic potassa or caustic soda, which affect the gelatine film seriously, particularly in warm weather. It is to be preferred to the pyro developer for the reason that it only feebly discolors yellow in the open air, causing no yellow or brown stains on the hands. The development proceeds a little slower than the oxalate or pyro developer and can therefore be easily watched and several plates developed at once, conveniently. The negatives are very handsome and clear, without showing too much excessive covering in the high lights as is oftentimes the case in the oxalate developer. But the main advantage of the hydroquinone developer is, that one can vary the time of exposure. I have taken the same view with an exposure of from two to eighty seconds, and developed the plates at the same time without any addition of bromide of potassium, whereby it was shown that the plate which had an exposure of eighty seconds (therefore exposed forty times too much), yet gave a negative of comparatively good quality. By application of old developer or addition of bromide of potassium a completely serviceable negative could undoubtedly have been obtained.

The almost unlimited time in the exposure admitted by the hydroquinone makes it particularly suitable for those who have not sufficient practice in determining the proper time. The developer can be used quite often, and if necessary is strengthened by addition of fresh developer. Highly sensitive plates which, with other developers, even with bromide of potassium, would not work entirely free from fog, gave completely satisfactory results with hydroquinone.

The color of the negatives differs somewhat according to the time of exposure. Correctly exposed negatives have a neutral black color, similar to those developed with oxalate. At longer exposure the color will appear more brown, as in the pyro development. Strongly over-exposed negatives have a peculiar greenish color. In regard to Hevre's assertion (Bulletin de la Soc. Francais de photogr.) that hydroquinone is less effective on plates of short exposure than other developers, I would like to remark, that I have myself with plates of very short exposure—instantaneous views on a dark day—obtained with sufficiently long development at least just as good results as with pyrogallol or iron. Shortly exposed plates can be treated much longer than with other developers, without fogging. For the development of many kinds of color sensitive plates, *i. e.* eosin silver plates, which will fog with oxalate developer, and are therefore developed with pyrogallol, hydroquinone is very useful.

The hydroquinone developer can also be used with great advantage for bromide of silver gelatine emulsion paper. The iron development acts often too rapidly, so that it requires great practice to develop more than one copy at a time, and great care must be taken to prevent over-development. The paper spots easily, too, by touching the gelatine film during development with the fingers, although this can hardly be avoided. The hydroquinone developer does not have this inconvenience, and a dozen copies can be developed at once, treating them in the same way as in taking albumen prints. By too much exposure green pictures are obtained, but the green tone can be removed by toning the pictures.

The following gold bath tones bromide of gelatine pictures pretty quickly:

Acetate soda (1:100 water)	100 cc.
Chloride of gold (1:50 water)	“

By using this bath pictures can be obtained from dark brown to bluish black.

The advantages of hydroquinone are of such a kind, that I use it now exclusively and recommend it to others as a true universal developer.

In regard to the above mentioned formula with carbonate of soda, I might mention a serious misapprehension among photographers. Many people are in the habit of taking bicarbonate of soda when simply carbonate of soda is prescribed, which has caused already a great deal of mischief. Those without any knowledge of chemistry are generally of the opinion that bicarbonate of soda has twice the strength of the single. This is a great mistake; the bicarbonate not containing twice as much sodium (which is the principal thing) but twice as much carbonic acid, which is of no use in the development, but on the contrary, is injurious (forming bubbles). Thus I find in a Belgian journal an article about hydroquinone, where the above mentioned formula is published; unfortunately bicarbonate is mentioned, and it is not to be wondered at that the formula is declared as useless. Recently I received several letters from amateurs about the developer. They complained that carbonate of soda would not dissolve in eight parts of water. They had taken by mistake bicarbonate of soda, which is difficult to dissolve. Some weeks ago I advised an old photographer to precipitate his silver baths with carbonate of soda, as I have been doing for twenty years. The man wrote to me that it proved absolutely useless, the silver precipitating only incomplete and under violent fermentation. This man had also taken bicarbonate of soda. This may be a caution to others.

It is known that dry plates, if not varnished, will easily receive silver spots during printing, if the paper should happen to be moist. Therefore the protection by varnishing the negative. Mr. Theo. Goltzsch informs me that unvarnished plates can be protected against a certain degree of moisture by rubbing them with linseed oil. This is done with a tuft of soft cotton, kept in a closed box in which it will remain flexible for some time and be secured against dust. With a second tuft the plate is rubbed dry. By such a manipulation the plate is at the same time cleaned from any deposit remaining from the developer, and is generally in a neater condition, which is particularly of importance for positives to be used for projecting purposes. If such a plate is to be intensified or reduced afterwards, the linseed coating can easily be removed with alcohol. This manipulation can, of course, be applied only where no retouching is required.

Lately Mr. Miethe called attention to the great mistake made in the determination of the light power of our lenses. Ordinarily the diameter of the front lens is measured, divided by the focal distance, and the result squared. Thus one obtains for a Voigtlander or Dallmayer portrait lens $\frac{1}{3}$, for a Steinheil aplanat $\frac{1}{7}$, which, squared, will give $\frac{1}{9}$ and $\frac{1}{49}$. In these proportions, as asserted, are now also the light powers of the lenses, therefore 49 and 9. This is almost like $5\frac{1}{2}$ to 1; that is, the Voigtlander has five times more light power than the aplanat. But this calculation is not always correct. Mr. Miethe says: "It is clear that the rays emerging nearly parallel from a sufficiently distant point are made convergent by the front convex objective glass, that is refracted toward each other, as far as they touch the same. They all would cross in the focal points, if the diaphragm did not retain part of the marginal rays. If the cone of light cut out by the diaphragm (whose point rests upon the ground glass), is prolonged towards the front lens, it will cut the same lens surface in a circle, whose diameter is larger than the diaphragm opening. We know from geometry, that the diameters of circles are in the same proportion as the heights of similar cones, whose base they are; that is, in our case that they are in the same proportions as the distance of the diaphragm to the distance of the front lens from the ground glass (of course after removal of the refracting back lens). It will easily be seen, that the opening is generally determined by simply measuring the diaphragm diameter, and is less faultless in proportion to the distance of the diaphragm from the front lens, and the shortness of the focal distance. To find out the correct opening of a double objective, proceed as follows:

First remove the back lens, insert the diaphragm to be tested, whose diameter should be determined by careful measurement, and focus sharply upon a distant object. The distance between ground glass and front lens is then measured, and also the distance between the ground glass and diaphragm, and with the quotient of both the diaphragm diameter is multiplied. The figure so obtained is the true opening of the objective. Example determined on a portrait:

1. Diaphragm diameter, 27.2 mm. 2. Distance from ground glass to diaphragm (after removing the back lens), 227.1 mm. 3. Distance of the ground glass from the front lens, 282.3 mm. This gives the true objective opening,

$$27.2 \text{ mm. x } \frac{282.3}{227.1} = 33.8 \text{ mm.}$$

A simple calculation shows that in this example, whose figures even do not represent an extreme case, the erroneously determined objective diameter would have suppressed the calculated light power from 1,613 to 1,000, a size which corresponds with practice.

BERLIN, April, 1888.

LOOKING BACK; OR, THE OLDEN DAYS OF PHOTOGRAPHY.

BY H. H. SNELLING.

THE history of photography has been frequently and well written, so I doubt not the readers of the BULLETIN are well instructed in the rise and progress of the scientific art to which they are devoted. But I do not propose to write its history over again; to give a series of sketches of the men of the past and their work is my aim, that the living veterans may live their lives over again, and the younger photographers may become better acquainted with those to whom they owe so much for the advantages which they now enjoy.

Half a century is a long time to look back through the ranks of any given class of men and expect to count many still in the land of the living or pursuing the same vocation with which they commenced to fight the battle of life. Many proficients in daguerreotype at the start never lived to see the collodion plate or the albumen process, and yet fewer who had the pleasure of seeing the present marvelous products of the camera and sensitive plate. The pioneer men who seized the magic wand of Daguerre from 1837 to 1840, and presented them to all, wonderful efforts of sunlight on the silver plate, who still live, must smile when they look back and remember the announcement of the discovery of the bromide of lime and other discoveries for the improvement of the daguerreotype, and then look upon the results of more modern inventions. Yet we take up the daguerreotypes of the masters of a few years later, still as perfect as on the day taken, and say to ourselves, what can be more exquisite in all the qualities necessary to make a charming picture, and delineate the human face and figure with great accuracy. Notwithstanding the wonderful proficiency in the retouching of negatives to which photographic artists have arrived, we occasionally meet with those outside of the profession who sigh for the return of the "good old days of the daguerreotype."

Those who have taken proper care of their daguerreotypes, and that is simply keeping out of damp places, will find them now as perfect as when taken thirty, forty or fifty years ago, and if they were well executed cannot be held by the owner otherwise than as gems of art. I do not think he of the palette and pencil will, at this day, meet this expression of opinion as it was forty years ago, with "Art, pooh! Nonsense!" It will be remembered by the veterans that at that time we predicted that photography and "artists" would in the future hold the relations with photography that they now hold. Perhaps it will do our veterans no harm if they review our assertions from 1844 to 1858 as to the then future of photography and ascertain how many have proved fallacious. We think our present series of articles will not lose confidence in the retrospection.

Do not understand us in these remarks on the daguerreotypes as disparaging the paper photograph, for the latter has attained a perfection in the hands of some artists that is not surpassed by the daguerreotype, but this surpassable excellence is, comparatively, confined to fewer men than was the former. We may be wrong in this estimate, as we judge from our circle of present acquaintances in the art.

I took occasion several years ago of speaking disparagingly of "retouching," principally on the ground of impaired likeness. I am free to confess the beautiful and artistic manner in which this work is now performed imparts new charms to the photograph and gives it a "finish" of exquisite loveliness (in female pictures) that cannot be imparted without it, but as to perfect likeness in all cases my objection still holds good as attested by many photographs of those I know that I have seen. This opinion was first derived from the lamentable failure of an artist to "improve" the likeness of a picture, and was subsequently confirmed by an incident. One of our then most celebrated photographers in New York City was executing three pastel cabinet portraits of my brother for me. When the pastel artist had completed the first he sent for me to examine and pass judgment on it. As soon as my eyes fell on it he was greatly surprised at my exclamation: "You have lost the likeness. That is not my brother." I took a chair and sat down before it and requested him to do likewise. He shrugged his shoulders, but complied. "Now take your crayon and let us see if two heads are not better than one," we said. We studied the picture carefully, but despondingly. It was a beautiful piece of work, and we wished neither the artist nor myself to lose the enjoyment of his labor. We turned our head to speak to him and suddenly turning it back upon the picture we instantly caught the defect: "Take your crayon and turn the right corner of the mouth down," we said. "One touch. Not another stroke," we exclaimed, and the result, we have a portrait, a perfect portrait, of our deceased brother that we prize above the most costly diamonds. This and other similar instances prove conclusively that the most skillful artist cannot always preserve the resemblance, though he have the original photograph before him.

The Beautiful, however, is what the people want, and they seem willing to forgive any defects in a picture as a portrait. This should not induce negligence in the artist towards perfection in perfect resemblance, for although the sitter may be better pleased with the artist's skill in producing an exquisite picture, a time will come, as in my own case, when a faithful likeness would command a far higher price than the beautiful thing possessed.

We have seen enough of the world to expect to find some cavilers at such ideas, yet they are self-evident facts that will present themselves to those who have lived as long as we have and experienced the same bereavements.

In glancing along the line we find the practical photographer still mainly confined to portraiture. Little or no progress has been made by him in the composite. It seems to us, in fact, that in the days of the daguerreotype this beautiful branch of art had more devotees than now, although the opportunities and advantages are more favorable for the display of skill and taste than then. When we think of our Whipple, our Black, our Barnard, our Harrison, and our Hesler and others of the "olden time" we wonder why we find none now to carry their ideas in this direction to perfection. The various processes of photo-engraving, etc., do not compensate for the loss of such beautiful pictures as might be produced by the camera.

It is a mistake that cheap pictures, in this age of cheapness, pay the best always. The American photographer could follow to advantage the method of the English print-engravers, who publish their best works by subscription, obtaining a very high price for them on the assurance that a limited number of copies would be printed and then the plate destroyed. In 1860 we copied a drawing of one of our great artists in two sizes—one the same size as the original drawing, the other, double its size (this last was a feat never before accomplished, and we have never heard of its being done since). We made but twelve copies of each on albumen paper. Subsequently we sold the smaller size for $20 cash and the larger for $25.

We give these facts and suggestions as an introduction to what we shall write hereafter. When we speak of the men of the past—of the "olden time" and their doings, we shall take occasion to give others that may, by comparison, enforce such ideas as we may offer. We are glad to get back into the realms of photography, for the advancement of which, in times past, we spent a large amount of our earnings, although it has been brought about by the almost total loss of our eyesight. To the veterans still living in the delights of their vocation we tender our *entente cordiale*. To the more modern of my readers, we wish a life to good old age and eminence in their profession (as photography is a scientific art we think we can use the expression).

(*To be continued.*)

PRESIDENT WALKER'S ADDRESS—SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

(*Continued.*)

There has also been marked improvement in printing papers, and some new papers have been devised, possessing decided advantages. One known as the "chloro-bromide," has given very pleasing effects, and is easily toned to any desired color by a solution sold with it. I have seen the softest browns and clearest sepia tints produced, and recommend it to the attention of members,

I may here mention that it has surprised me very much that so little work is done with the platinotype process. There is no print so lasting, nor so pleasing in its tone.

Having had some experience in the production of these prints, I am glad to say, that at my suggestion some of our members, notably Dr. Piffard, Mr. McKune and others, are taking an interest in the matter, and in fact are daily busy in working this process, which is so simple as to be within the easy range of any member's knowledge of such matters. The present process consists in spreading upon the surface of a well-sized paper a solution of iron and platinum, which can be done in a moderate light. When dried and exposed under a negative in the usual way, the print is developed in a hot solution of oxalate of potash. This is the whole operation, and gives the happiest results. It affords me pleasure to add that Mr. Willis, the inventor, has recently improved upon this process, and combines the platinum with the oxalate solution, instead of with the iron sensitizing solution as heretofore. I therefore urge upon members careful study of this process, and feel certain they will find themselves amply repaid in the very satisfactory results obtained.

Indeed, had I the time to do so, I would gladly give a demonstration before you, but must leave it to others to follow the suggestions I have made. I venture to state that if the amateur employs this process and makes his own paper, the entire cost of producing his prints will not exceed one-half the present cost of his silver prints.

I cannot at this time fail to call your attention to our efforts to bring into use the metric system for the weight and measurement of all photographic chemicals. It soon becomes familiar to any one, and affords a rapid and exact means of calculating proportions. I suggest that a circular be sent to every member, printed in accordance with the formulas given by Dr. James H. Stebbins in the paper which he so kindly prepared and recently read before the members. It will be found useful and interesting in a high degree. It well becomes this society, with its large and influential membership, to undertake this reform, urging the adoption of this system by all societies, and I earnestly trust the matter will be pushed to a successful issue.

The sensitometric numbering and method of packing plates are subjects which also occur to me as worthy of marked attention, and one of interest to us in all their parts.

As to the first, it seems unfortunate that the makers cannot unite on some common standard in this respect. As matters now stand no one knows what the sensitometer numbers now indicate as stated on the different brands of plates. There does not appear to be any unanimity on the subject. Some attention should be given to this matter in order that all may know approximately that the basis of sensitiveness is common to all brands.

I desire also to urge upon members the making and use of orthochromatic plates, by which great detail can be obtained from colored objects. A red rose looks like a rose, and not like a turnip.

The petals and inner surfaces between the exterior leaves are plainly visible in the photographic print. In fact the orthochromatic plate is extremely sensitive, and at the same time the object deeply impresses it with the smallest details, and it is therefore superior for landscape work, the foliage being so clearly shown in detail. A closet has been specially set apart in the dark room for the preparation of these plates, and Mr. George H. Ripley has presented to the society a drying box which will also be found there ready for use. Any plate may be made orthochromatic by flowing a proper solution over its surface, the formula for which may be obtained from members here. I therefore repeat that I urge you to patronize the facilities afforded you for this purpose.

The work done by this society relative to the packing of plates, has borne good fruit. Except in one or two instances, mat marks have disappeared; but it will require your unceasing vigilance to keep this so. Many of the makers are careless in not cutting their plates square; that is, they are cut on the bias, and so are the source of annoyance and loss to the users. Nor are they of an even thickness; some being an eighth, and others in the same box being a sixteenth of an inch thick. All these matters require your persistent efforts to remedy, and it will redound greatly to your credit when done, as it will be if your work is properly directed.

I must conclude this portion of my address by earnestly entreating you to avail yourselves of what has been placed in these rooms for your use and comfort. So far as we have been able, we have constantly increased your outfit in such directions as were thought to be best for your growth in photographic knowledge. Many have utilized these facilities, but we wish still more would do so. The truest pleasure is found in experimenting with proper discretion. Try new methods and processes; the research will amply repay your trouble and expense, the latter usually being very small. You will learn very little unless you pursue this course, and pursuing you will be within the possibilities of success. Should you succeed you will gain your own approbation, and the applause of your brethren and the fraternity at large, which will be no mean tribute to your persistence. For your convenience a stock of plates has been kept on hand, under the immediate supervision of Mr. C. C. Roumage. These plates have been sold to you at cost; the object being not to realize a profit, but to accommodate those needing them for use at these rooms.

The plan arranged by our predecessors for printing has been continued by us during the year. It has required that length of time to fully demonstrate it a failure. The loss entailed has been about three hundred dollars, and in view of this fact your Board of Directors discontinued the same. There is no doubt that it was a great accommodation to the members, but the details connected with its financial success were so many that no member of the Board could give the matter the attention required, and we could not afford to employ any one expressly for that purpose. There is every probability that with proper attention bestowed upon it, it could be made to pay—or rather it would not involve the society in any loss. This management it is impossible at present to obtain except at a disproportionate expense.

The financial policy of the year has been the subject of our deepest solicitude, culminating in a determination that the annual dues should be increased. This conclusion was not reached without many misgivings as to its effects. It was felt that the present membership would be able and ready to respond to any reasonable increase. Nor were we in error; for an amendment to the Constitution has fixed the annual dues at sixteen dollars, with very little, if any, opposition.

A wise provision was, however, made to place one-fourth of receipts therefrom in trust as a sinking fund, to be used only with consent of the members.

This should aggregate a fund of about one thousand dollars per annum, which will afford ample security for the future financial prosperity of the society. It is not for me to anticipate the action of your new Board of Directors, but I presume they will increase as far as possible the facilities for the work and comfort of members, some of whom may think it a necessary consideration for the increased dues.

With reference to the membership certificates, your present Board considered their further issuance as useless and unnecessary. By the Constitution they were limited to two hundred, and declared not to be a lien nor confer any proprietary rights to or in the property of the society. If they were merely what their face showed them to be, then the possession of one was a mere piece of "red tape," and of no more value than the receipt for dues, etc. For these reasons, as stated, they have by the new Constitution been dispensed with.

However, at the time of their first advent, they were instituted to secure a loan for the purpose of fitting up our rooms. Now, so far as this loan is concerned, it should be held as a moral debt, and as many of these certificates as represent that loan should eventually be redeemed. I think we all stand pledged to do this. By careful inquiry I have ascertained that not exceeding twenty certificates are held in excess of one by each holder; and that of these twenty, fully ten and perhaps more of them would, on proper application be turned into the society as a gift.

If this be so, then only ten would be outstanding for redemption, aggregating one hundred and fifty dollars only. The matter should be carefully examined, and a list of those issued for the loan should be prepared and placed on file for future use. All those members who were elected after the date of this loan were, by the Constitution, obliged to possess one of these certificates as a *pre-requisite* to membership. It is therefore an easy matter to determine who hold these loan certificates, and the number of them, by making a list of those taken by persons who were members prior to that date.

But I must hasten this already too long address to a close. I do not know that I have imparted to you any new enthusiasm for the society's welfare. Nor do I know that you care materially for my advice, nor for such facts as I have given to you. Rest assured, however, that I am not actuated by any selfish motives, but offer the suggestions made with much diffidence to those who, I am conscious, know a deal more of such matters than me. Kindly accept what I have said for what you may deem it to be worth, and consider with kindliness the spirit in which my suggestions are made.

Before closing, however, I must make some allusion to the different relations which photography bears towards us as individuals. Of course I can only touch very briefly in the directions mentioned.

To the individual, photography opens a wide field for thought. He is placed in nearer communion with "nature and nature's God." His viler parts are kept in subjection while in contemplation of nobler things. His veneration is increased. What could purchase of the amateur his pictured views of rivers, lakes and mountains, now dear to him by association? Perhaps rendered memorably holy to him by some event important to his life. In fancy he again wanders o'er these hills, each path hallowed, perhaps, by some love token, or an exchange of vows. How dear, then, is this picture to his heart! Can any one deny that all this goes to form character, and that as individuals we should grow in mental and moral strength by very force of our surroundings? There can be no doubt that this is one of the safety-valves of the community, whose inclinations might, and often do under surrounding influences, lead them into other channels less refining, and perhaps into dissipation and crime. Photography is a pleasant relaxation and security against hurtful indulgences. It exalts and refines the mind, and keeps at a distance selfish principles and conduct. This conclusion is drawn from the common experiences and observation of men.

Of course these reflections are not addressed to those persons whose sordid natures make them so blind that they are unable to distinguish between the intellectual and material.

They would measure poetry by the yard, and buy statuary by the ton.

Of course the amateur has in his time been the subject of some ridicule. He has been called a "crank." I remember very well the time when a man who wore a mustache was called a "crank," a gambler, a thief. He was looked upon as a dangerous character.

Every period of time has its "hobbies" and its prejudices, and a man may be sensible, ridiculous or a crank as fashion decrees. But enough of this.

Mr. J. Ward Stimson recently said, in an address before us, photography is but one of the expressions of art, and is affected by the moral, "physical and intellectual conditions of the observer." I believe that healthful study of beauty, in whatever form, brings into use exact principles of composition; yet they are capable of great expansion under the influence of individual temperament.

What we see under agreeable conditions is pictured to us in pleasant forms and reflected in our conduct and work. To a dyspeptic, all the world is awry.

Art, then, is deeply under the influence of physical conditions of observation. Photography, if not art, is so closely allied to it, that it relies upon the healthy perceptiveness and habits of the composer. It is this relation which bears directly and immediately upon your work. No man can compose who has not cultivated the soul of a composer. To make or appreciate music requires a tuneful ear. To make a good picture requires a trained eye and mind, with proper temperament.

I may now mention a single instance as to how photography enters into all phases of our individuality, and almost forms a part of our daily business. Take its uses in astronomy, where so much service has been rendered by it in the search for heavenly bodies, to map out the heavens, to record important astronomical events and for similar purposes. In 1882 photography revealed, with an ordinary lens, a galaxy of stars never known before, and seen for the first time through the tail of the great comet of that year. Its research went beyond the comet, and in the background the sensitive plate found and brought to view these new stars, astonishing the whole scientific world. Since that time most celestial charts have been prepared by the aid of photography, by which they are made accurate in the highest degree. It is said that at the Paris observatory, where one hundred and seventy stars only had been known to exist previously in the constellation "Cygnus," photography disclosed five thousand or more. When the great Lick observatory is in working order, with its monstrous telescope in position, we may look for great results. It is beyond our power to conceive what a revelation will be made through it by the aid of photography, and what wonders will be brought to light, far exceeding all that has gone before.

Thus photography enters into all the pursuits of our daily life, and is beneficent to all.

But I cannot pursue these interesting topics any longer, time will not permit me to do so.

It only therefore remains for me to thank you, members, officers and all, for the great kindness you have shown towards me during my term of office. No man could be more deeply sensible of this. In response to that kindliness, I have gladly given the society a vast deal of my time, and such abilities as I possess. The honor of having presided over such a body will always be a source of pride to me, and I retire filled with a lasting sense of my obligations to all of you. I can only ask you to give to my successor the same earnest support you have given to me. Without it he will make an utter failure, but with it he will lead you on to future growth and prosperity. To him I confide your interests, trusting that he will guard them with a jealous eye. If he be courteous, as I have no doubt he will be, concilliatory and conservative, as he should be, I am certain he will meet with deserved success in the conduct of your affairs. Do not hamper him with unjust and petty criticisms ; be lenient, and considerate, remembering that in so large a membership there is apt to be many adverse opinions which sometimes clash and destroy that harmony which should prevail. Be his friend rather than his critic, and you will merit his love and gratitude.

I must not forget to pay some tribute of respect to those members who have passed away during the year. Death has dealt lightly with us, if the loss of only one or possibly two of our members may be so considered. Still, how heavy is death's hand to the individual and the family.

Mr. Joseph W. Drexel, a much respected member of this society, and one of our most distinguished citizens, recently died regretted by a wide circle of friends.

Mr. J. Smith Lee, another member, sailed from this port on the the twelfth of last month on board of the yacht "Cythera," and has not been heard from since. It is feared that he perished during the recent gales and that we shall never see him more.

These thoughts are indeed saddening and admonish us to be ready for the inevitable hour which comes alike to king and peasant, and being ready

> " Approach our doom like one who wraps the drapery of his couch about him
> And lies down to pleasant dreams."

And now, too, I must part from you, temporarily, I hope, for in a few days I shall be on the sea with my family, bound to the eastward for a needed rest. I shall find it hard to sever my very happy relations with you, who have all seemed to me as so many personal friends.

May peace be with you, and God spare us all to meet again.

LANTERN EXHIBITION—SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

APRIL 25, 1888.

"A trip through Switzerland," explained by Professor D. L. Elmendorf, of the New York Deaf and Dumb Institute, was the subject of the lantern entertainment given before the society on the evening of April 25th, under the management of the new Lantern Slide Committee and it proved to be very enjoyable to the crowded audience which filled the limited area of the society's meeting room.

Leaving New York for Havre we see an excellent view of the friends of the passengers on the dock shaking their handkerchiefs and "good-byes." This was explained as a most difficult picture since it was taken directly against the sunlight. Some pictures on board the steamer, including the lady who held a book before her face, but who lowered it to hear the good story the Professor was telling the captain, when she was subsequently unconsciously caught in the picture which also includes an excellent likeness of the genial captain, and a view of the officers on deck taking their daily observations, next followed, and were all excellent. One or two views of ships in full sail in mid-ocean and a deserted wreck were much admired.

Arriving at Havre we see the splendid docks and harbor, with the lighthouses, also the peculiar construction of lines of piling projecting into the sea to break the force of the waves. With one or two views in Rouen the journey was continued to the western end of Lake Geneva, here the special kind of boats used were exhibited, the churches and the architecture. A trip around the lake was made and included some magnificent views. Professor Elmendorf considered it the most beautiful place in the world.

From the lake the Rhone Valley was followed, and included interesting glimpses of Swiss life: we saw pictures of the best ladies in town, wearing odd-looking beaver hats, a group of Swiss guides having their favorite long pipes in their mouths, and a group of Swiss children caught when they did not know it. Ascending the valley the noted Rhone glacier is reached. Here we observe the little stream of water issuing from the base of the mammoth glacier which forms the constant supply to the River Rhone.

Excellent views of the ascent of the glacier and from the top of it in different directions next followed.

The treacherous nature of the snow in covering up great crevasses through which guides sometimes fell to their death was explained, and in descending the glacier on a sort of toboggan slide, the speed attained was stated to be something terrific. A view showing the party ready to start on the downward trip was capitally done.

Then followed views along the Furca Pass to Andermatt; here the St. Gothard Pass was reached and views showing the entrance to the great tunnel were exhibited. Passing through the St. Gothard Pass, we come to Altdorf, near Lake Luzerne, the place where William Tell is said to have shot the famous apple; splendid pictures of the tower and of Tell's statue were shown.

Proceeding from Altdorf, we pass through Klausen Pass to Linthal, thence over into Tyrol, Austria, a perfect heaven for the camera, as the professor expresses it; mountains, valleys, rivers, churches and curious people, all form a great variety for the amateur to select from. Here we go through wonderful ranges of mountains, passing up the Kauserthal to the Oetzthal Range, over the Gepatch, Kesselwand and Hinterer's glaciers into Sterzing.

Proceeding thence by train to Salzburg, we catch pretty views on the way and take a walk to Konigs See. Passing by Munich, we go at once to Lindau, on Lake Constance. Here we have an excellent view of the steamer leaving the town. The Austrian Custom House officials, Professor Elmendorf said, were the most stupid blockheads he had come across. They insisted on opening everything, but when told that it was nothing but glass they accepted the statement; so sensitive plates in that country are considered as so much glass, which must be weighed and paid for at so much per pound. He wished there might be some dynamite box go off among them some time, that they might be scared.

In Germany, and France and Switzerland it was sufficient to show that you were an amateur photographer to successfully get along.

Crossing Lake Constance by boat, we take the train to Zurich, on Lake Zurich, and a city noted for its fine buildings, splendid architecture and beautiful surroundings. A fine view of the Grossmunster or principal cathedral was shown, also of the front of the main railroad station, of the first-class passenger coaches and locomotives. The superintendent sent for a new locomotive three miles away to come up and be photographed. The trains travel through a city and suburbs at snail pace. Should any one jump on, they stand a chance of being arrested and fined.

A peculiar view was taken from the rear end of a train looking forward as it was going around a curve. The average speed is twenty-five miles an hour.

From Zurich we pass on to Zug, on Lake Zug, where Professor Elmendorf arrived just after the terrible avalanche of 1887, which carried down buildings and people into the lake in a second, killing many hundreds. His splendid views of the debris and results of the disaster told of the appalling effect it must have had. He related one or two pathetic incidents about it. Unfortunately, his exposures on the famous Rigi Mountains at the southern end of the lake were spoiled. But other glimpses of the fine scenery around the lake were shown.

Going now to Lake Luzerne and Luzerne we reach a most magnificent country, abounding in beautiful scenery and fine hotels. Several views of the noted Lion carved out of the solid rock were shown. Views of the Swiss post office cart were also exhibited, and the fact that they will carry a trunk around by post, packed with crockery, which is never broken, was explained. It was far more perfect than anything in America; you simply put a postage stamp on the trunk and it would go early and safely to the desired destination.

From Luzerne the trip ended at Berne; here was shown a superb panoramic view of the whole city taken from one of the surrounding peaks. Excellent views of the famous peaks over twelve thousand feet high near the city, such as the Jungfrau, Schreckhorn and Wetterhorn were shown, also a view of the celebrated High Clock Tower which stands in the center of the city, and has a procession of bears come out and move around it when it strikes the hour. There were also pretty views of some of the avenues and the fine hotels. The view of the great Nydeck Bridge entering Berne and said to be the largest in Switzerland, was very fine and loudly applauded. The last slide shown was colored with twenty-seven different colors; it represented a picture of a Roman tower near Berne, looking against a setting sun. The effect on the screen was charming, and it formed a good ending for such a pleasant evening's entertainment.

In speaking of the trip (after the story was told and the lights turned up), Professor Elmendorf remarked in reply to questions that he had three gross of 4 x 5 plates made for him specially by the Stanley Company, and out of two hundred and seventy-four shots he made, he secured two hundred and fifty-eight good negatives and slides. He did not develop any of the plates until he returned home, and then he used the Cooper soda and pyro developer, using twice the amount of pyro, which is usually advised, since for slide negatives it was necessary to carry the development along pretty well to get density and contrast in the high lights and depth and density in the shadows. He developed two at a time in one tray. All of the slides were made by contact on Carbutt's lantern slide plates, the time of exposure being from one to three seconds, about a foot away from an ordinary gas flame, and were developed six or eight at a time in the hydroquinone developer as advised by Dr. Piffard, using it at its full strength and taking out each plate as it appeared to have enough density. If the plate was over-exposed, the picture would have a brown black color; if properly timed, it would be more black. The developer was much better than the ferrous oxalate for this purpose.

The following is the formula:

Hydroquinone	15 grains.
Sulphite soda	60 "
Water	1 ounce.

SODA SOLUTION.

Carbonate of soda (crystals)	30 grains.
Water	1 ounce.

To form the developer, mix equal parts of each and after using return to the bottle to use over again.

Professor Elmendorf advised adding also a small quantity of a solution of bromide of potassium which would correct over-exposures. He carried a light 4 x 5 Novelette camera, seldom using a tripod, and used a battery of for or five different lenses of different focal lengths for distant, and near views. He believed in short exposures for interiors.

The slides were colored by aniline dye colors and he generally combined two complimentary colors, one film over the other, to obtain a particular color. The careful and perfect way in which the slides had been colored attracted considerable notice and showed that the Professor was an adept at it. A vote of thanks was accorded to the Professor for the entertainment. It is a long time since the society has such a thoroughly good exhibition which it may be said was due largely to the efforts of the new Lantern Slide Committee.

President Canfield announced before the exhibition commenced, that the society's lantern would be used and that the Lantern Slide Committee whom he had had appointed, consisted of the following members: F. C. Beach, Chairman; Charles Simpson, Walter A. Singer, Clarence S. McKune, George Marshall Allen and George Boynton.

Professor Elmendorf, explained the pictures in an easy off-hand entertaining way. Mr. Beach and Mr. Singer operated the lantern satisfactorily and were assisted by Mr. Simpson. A few miuutes after ten the exhibition terminated.

THE THEORETICAL ASPECT OF ORTHO-CHROMATIC PHOTOGRAPHY.

BY CAPTAIN W. DE W. ABNEY.

[Read before Camera Club Conference.]*

(*Continued.*)

I HAVE thus cleared the ground to some extent for what I propose to say on the theory of the subject. The experiments which I shall describe to-day will be confined to two typical dyes, erythrosin and cyanin. The one combines readily with silver nitrate, and the other combines very feebly if at all with that same salt. It has been stated recently by Dr. Vogel that he considers dyes are optical sensitizers, and to use his own words, "a ray absorbed by certain dyes in the presence of silver salts acts more vigorously on this salt than non-absorbed rays." My reading of this was that the ray if not absorbed would do less work than the same ray which was absorbed by the dye. Now on turning over this sentence once again, I see it may mean that the ray absorbed by dye acts more vigorously on the silver salt than other rays which are not absorbed by it. If this is his meaning I tender my apology to him for an unintentional misrepresentation, and I agree with him in this sense.

I will commence by describing my experiments with cyanine. Cyanine is a most unstable compound. In solution, in will bleach in daylight, and even in the dark the color will be discharged by almost imperceptible emanations. If a plate be coated with collodion containing it, together with a soluble haloid salt, and be immersed in the silver bath, and exposed, on applying the ordinary wet plate developer to it we get a general fog over the plate. Even when using a dry plate, and developing with the organic salts of iron, fog is very often induced. So, too, it is found that a gelatine plate, if dyed with cyanine, will not keep long; fog is induced. The fog means that, even in the dark, the dye unaltered by light has a tendency to bring about an initial reduction of the silver salt; much more may it be supposed that the dye when altered by light will do the same thing.

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* This was unintentionally omitted in our last issue.

First.—I repeated an old experiment of mine, which was to tint a plain collodion film with cyanine blue, and to expose it in the spectrum, and then in the dark room, to coat it with collodio-bromide emulsion and to apply the developer. The plate had bleached in the orange of the spectrum, and on applying the developer an image appeared, or rather silver was deposited where the light had acted on the dye. In this case the emulsion had an excess of bromide that was well washed out. From this it appeared that since the silver salt had never seen light, a reducing action was caused by its subsequent contact with the bleached dye.

I next prepared collodio-chloride emulsions, one with an excess of silver nitrate, and another with an excess of calcium-chloride. Plates coated with both of these were exposed in the spectrum so as to print, a wideish slit being used in the spectroscope. As the results in this case were identical (except that the printing was rather more rapid with the former emulsion than with the latter), I may give one description for both. The plates showed in the violet of the spectrum the usual purple tint of the reduced chloride, the color being much fainter in the blue. In the green was no action whatever; whilst in the orange we had a distinct bleaching. Now, if the silver salt in contact with the cyanine were reduced in the same way in the orange that it is in the violet, there should have been besides a bleaching a darkening, but this was not the case; the chloride was apparently free from any sign of reduction. Similar plates were exposed for a shorter time to the spectrum and developed with ferrous citro-oxalate developer, with the result that in the case of the emulsion in which the silver nitrate was in slight excess, the orange band developed as strongly as the violet; whilst with that in which the soluble chloride was in slight excess, the band developed in the orange was less intense than that in the violet. Now, on comparing the printing action with the developing action, the deduction that is to be drawn is that the action of the orange light was principally on the dye, and not on the silver salt, only the small portion in contact with the silver acting as a developer, and that the nucleus was of a stonger type than that of the mere chloride, which would be the case if it were metallic silver that was formed.

Taking a gelatine chloride film and dying it with neutral cyanine blue, the printing action was likewise observed. In this case the sensitiveness of the chloride extends further in the spectrum towards the yellow from the blue end than when collodion is used, but the identical result was obtained as before. The chloride was bleached in the orange, with a very slight darkening, and in the violet, the blue, and slightly in the green the chloride was darkened. On developing a plate of the same kind, with a less exposure, the orange band developed up with nearly the same intensity as the violet. The same argument applies in this case as with the collodion films. Now, to make matters still more certain, a new experiment was tried, and one which proved highly suggestive. A chloride gelatine plate was coated with plain collodion, which had been slightly tinted with cyanine blue and was then dried. The plate was given a brief exposure to the spectrum and developed after softening the collodion film by means of alcohol. The plate developed up with a band in the orange very fairly strong. The cyanine was in this case only in close contact with the gelatine surface. Next a similar plate was prepared, and after exposure and before development, the collodion film was removed after thorough softening. The plate was then developed, with the result that there was a marked band of reduction in the orange, though not quite so strong; hence the removal of the film resulted in the partial removal of the cause of reduction. When ammonia was present with the cyanine the band appeared strongly. In these last experiments it was endeavored to remove all trace of the film containing the cyanine, which was a difficult matter in a dimly-lighted room, and many failures occurred. The reduced cyanine in the film thus acted to form a nucleus of reduced silver for development.

Negative varnish was dyed with cyanine, and a gelatino-chloride plate coated with it, with the result that after exposure in the spectrum the same action was manifested; on a complete removal of the varnish from a similar film, and after a careful washing of the plate the orange band was visible. It was evident that it was the last trace of the dye in surface contact with the sensitive salt which was productive of the orthochromatic effect.

BEHAVIOR IN THE SPECTRUM OF SILVER SALTS TREATED WITH CYANINE.

Silver Salt.	Vehicle.	Action shown on development.								Printing action.	
		Film stained.		Coated with dyed collodion.		Coated with dyed varnish.		Coated with collodion and after exposure treated with H_2SO_3.			
		Ordinary effect of spectrum.	Band in orange.	Ordinary effect of spectrum.	Band in orange.	Ordinary effect of spectrum.	Band in orange.	Ordinary effect of spectrum.	Band in orange.		
Chloride	Collodion.	Normal...	Moderate...	......	....	......	....	......	....	Darkens..	Bleaches.
"	Gelatine..	Normal...	Strong.......	Normal...	Strong......	Normal...	Strong......	Normal...	Nil in one case, in another very faint.	"	"
Bromide, Slight excess of Br...	Collodion.	Normal...	Feeble......	......	....	......	....	......	....	"	"
Bromide, (Slight excess of Ag.).	Collodion.	Normal...	Strong......	......	....	......	....	......	....	"	"
Bromide	Gelatine..	Normal...	Moderately strong.....	Normal...	Moderately strong....	Normal...	Moderately strong...	Normal...	Nil................	"	Slightly darkens.
Iodide	Collodion.	Normal...	Nil.........	......	....	......	....	......	....	Bleaches..	Bleaches.
Iodide	Gelatine..	Normal...	Nil.........	Normal...	Nil.........	Normal...	Nil.........	......	....	Bleaches..	Bleaches.

A plate was next coated with collodio-bromide emulsion which had been dyed with cyanine, and after exposure it was developed, after softening the collodion film well in alcohol. On removal of the collodion film on which the orange band appeared, the image of the violet and orange band was strongly shown on the gelatine plate. A similar plate was exposed and the collodion film first removed; on development, it was found that the orange band was rather weaker on the gelatine film than with the first plate.

Another experiment was as follows: A gelatino-chloride plate was taken, coated with collodion, dyed with cyanine, and exposed. The color of the dye was then removed by immersion in an alcoholic solution of sulphurous acid. The experiment showed that whilst the image in the blue and violet was developable, the band in the orange refused to show any trace of existence. This may have been due to the removal of reduced silver salt as well. The sulphurous acid would naturally attack the surface particles first. Next a gelatino-chloride plate which had been dyed throughout with cyanine was immersed in suphurous acid after exposure in the spectrum. The band in the orange did in this case appear, but more feebly. It was found that the dye was not discharged completely. These experiments have to be repeated, however.

So far, then, the conclusion must be drawn that the dye itself is reduced, and acts as what we may call a developer of the silver salt.

We have more evidence, however, which must be given. If a collodio-chloride film be dyed, exposed in the spectrum, then, before development, *be fixed*, washed, and dried, and afterwards be either coated with a collodion emulsion, and a developer be then applied, or if nitrate of silver and acidified pyrogallic acid be at once used, we have a development in the orange as well as in the violet and blue. Now in this case no bleaching action was manifest in the blue, whilst in my original experiment it was; for if the bleaching was not visible there was no effect in the orange. This would point to a slight reduction in the silver salt as well as in the cyanin, and the reason why the cyanin dye, when first bleached and then coated with emulsion, on development gave an image, would be due to the *quantity* of reducing matter which came in contact with the fresh emulsion.

The action thus traced is analogous to that which I remarked in a very old experiment made some years ago. Whether I published it or not I do not now remember. It is this. If a sensitive chloride or other plate be flowed over with ferric oxalate and exposed in the spectrum, then on development with ferrous oxalate there is a different spectrum produced to that developed when the ferric oxalate is absent. There is an increased action in the green-blue and a diminished action in the violet, to which the chloride is normally very far more sensitive when exposed in the usual manner. The explanation of this is very simple. The ferric oxalate is sensitive in the green-blue, and is there reduced to the ferrous state, which partially reduces the salt in contact with it. In the extreme violet, the ferric oxalate is less acted upon; and what is not acted upon tends to destroy the photographic action which has there taken place. If the ferric oxalate were neutral as regards the destruction of the image, we should in this case have an exact counterpart of the dye, the only difference being in the locality of the spectrum absorption of the two.

(*To be continued.*)

TO THE PHOTOGRAPHIC FRATERNITY.

The time for the meeting of our association is drawing near. We hope and expect to have a large attendance, and one of the best exhibitions of our association.

The arrangements made by the committee, Messrs. Carlisle and Potter, are nearly perfect.

We shall have a number of short practical papers read, and interesting discussions thereon. Let us make it a school as well as an exhibition of photography.

The rules adopted by the Executive Committee in relation to medals and judges to award the same, it is hoped will meet the approbation of the association. Under them they believe that merit will win.

The special prize (the Blair cup), to be awarded for the best photograph illustrating "Hiawatha," should, and doubtless will, bring out a great amount of the talent in our profession, and the result will be worth the journey to see.

The proposition for a mutual benefit department in our association will be brought before the Convention by the report of a committee appointed for that purpose. As their report has been published in the journals so that all have read it, they hope the members will come prepared to adopt, amend or reject it intelligently. Some feature of the kind would doubtless be a benefit to the association as well as to the members individually.

Our meeting will be held in one of the pleasantest cities on the continent. She is young it is true—younger than our young art—but she is as hospitable and large-hearted as her river and prairies. She will greet you with the music of her water-falls, the soprano of Minnehaha and the bass of St. Anthony.

> "With his moccasins of magic,
> At each stride a mile he measured;
> Yet the way seemed long before him,
> And he jouneyed without resting,
> Till he heard the cataract's laughter,
> Heard the Falls of Minnehaha
> Calling to him through the silence :
> 'Pleasant is the sound he murmured,
> 'Pleasant is the voice that calls me!' "

E. DECKER,
President P. A. of A.

OUR ILLUSTRATION.

THE illustration that we give with this issue of the BULLETIN is a novelty as a frontispiece of the BULLETIN. As a picture it is one of Mr. Falk's best efforts, and we are greatly indebted to him for the use of the negative. As a specimen of the latest development of photographic art, it is extremely interesting. It is printed on Anthony's Reliable Bromide Paper using the heavy smooth grade. The pictures were made by kerosene light with an exposure of three seconds, and at the rate of 400 an hour from a single negative without any special effort, the work being done by the Brooklyn Photo-Enlarging Company, A. A. Knox, Manager.

◆

HAD BEEN THERE HIMSELF.—Omaha Man—I sent you a communication yesterday stating that I had sent a ham to the starving family referred to in your columns?

Editor—Yes, I ordered it printed.

Omaha Man—It came out in the paper that I had stolen a ham from that starving family and was sorry for it.

Editor—My gracious! It was a typographical error, of course. I sincerely hope you will believe me. Don't shoot.

Omaha Man—I was only reaching for my pocket handkerchief, sir, to wipe the tears of sympathy from my eyes. I know how you feel about it. I did not mind it. I only called to direct your attention to the blunder so it would be corrected.

Editor—You did not mind such a horrible error as that?

Omaha Man—Oh, no. I'm used to such things. I used to be an editor myself.

ANTHONY'S
Photographic Bulletin.

EDITED BY
Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.,
and a corps of practical assistants.

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E. & H. T. ANTHONY & CO., Publishers.

ST. LOUIS CAMERA CLUB.

THE regular meeting of the St. Louis Camera Club, April 17th, was called to order by *President* BAIN, with sixteen members present.

The minutes of April 3, 1888, were read, and approved of as read. The Secretary reported that, in accordance with Mr. Wilcox's motion of April 3, 1888, he had ascertained the cost of renting a post-office box for the use of the club would be $8 a year. He recommended that no further action be taken by the club, which was approved.

The Secretary also reported that he had ascertained the cost of printing three hundred copies of the annual reports, etc., would be about $24. Deeming this too large, by the advice of the President, he had deferred the printing until the matter could be laid before the club.

On motion of Mr. Butler, the resolution, adopted at the meeting of April 3, 1888, ordering the printing of the annual report, was reconsidered. Some discussion followed, but no further action was taken.

The Secretary read letters from the Chicago Lantern Slide Club and the Photographic Society, of Philadelphia, announcing their approval of the Constitution of the American Lantern Slide Interchange, with a few suggested changes.

The paper of the meeting was read by Mr. Butler, the subject being "The Platinotype Process." Materials for the demonstation which followed were kindly furnished by Messrs. Willis & Clements, of Philadelphia, the proprietors of the patents. The paper began with a brief account of the printing processes in general use, and divided them into two classes, development processes and printing-out processes. The objections to the ordinary process of "silver printing" were fully discussed, and the superior permanency and greater ease of working the platinotype process were explained and illustrated. The demonstration which followed the paper was watched with great interest by the members, to most of whom the practical working of the process was new.

The lantern slides of the Brooklyn Camera Club, and of the Boston Camera Club, were exhibited to the members present.

There being no further business, the club adjourned to meet on Tuesday, May 1, 1888, at 8 P.M. WILLIAM M. BUTLER,
Secretary.

PHOTOGRAPHIC SECTION OF THE ROCHESTER ACADEMY OF SCIENCE.

C. J. PLAYER kindly entertained the members of the section by giving a demonstration and explanation of the working of the concealed camera. Some views which he had taken with it showed excellent cloud effects and some very amusing scenes, and as drop-shutter work gave the highest testimonial of the excellent working of the instrument and ability of the operator. This camera is supposed to be concealed under the vest or coat, and the shutter worked with a string. After the demonstration some drop-shutter views were developed by the Secretary with the hydroquinone developer. This developer is yielding satisfactory results in the hands of some of the members of the section.

A vote of thanks was extended to Messrs. Bausch, Lee, Dumont and Mathews, for favors at the last lantern exhibition.

The subject for next meeting will be the development of orthochromatic plates, by E. W. Horne. Yours truly,

MILTON B. PUNNETT,
Secretary.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

INFORMAL MEETING, APRIL 18, 1888.

Vice-President J. B. GARDNER, in the chair.

The first half hour was occupied by members of the section in discussing the advisability of selecting, on each evening, some definite subject to be considered at the following meeting, thus giving an opportunity to all to make the needful preparation. After due consideration, it was thought by a majority of those present, that selecting a subject a month in advance would tend to destroy the main purpose for which their meetings were instituted, viz.:

To give the opportunity to each and all to suggest such matters as they were individually interested in; and on which they could impart practical information, while at the same time they received from their fellow-workers such hints and bits of experience as might aid them in the successful accomplishment of their work.

Mr. C. VAN BRUNT inquired if any of the members present knew of a practical method of mounting albumen prints in a way to prevent cockling.

Mr. THOMAS FARIS expressed his belief that gelatine first softened in cold water, then melted by means of a hot water bath and thinned to the proper consistency with alcohol would make an adhesive paste that could be applied without cockling the paper.

Mr. VAN BRUNT replied that he had read in one of the photographic journals that this could be accomplished by using a shellac paste; but this formula, in his hands, had proved an utter failure, and he was doubtful whether any gum where alcohol was used as the solvent would not be lacking in its adhesive properties.

This lack of adhesiveness, when alcohol was used, was confirmed by the experience of a member present; and, hence, the formula referred to, they believed to be, of no practical value.

Secretary MASON stated that at the suggestion of Dr. Charles Rice, the chemist of Bellevue Hospital, he had made some experiments with hypophosphorous acid as a preservative for the ordinary iron solution used in developing negatives. That one minum of this acid in each ounce of the iron solution prevented the gradual change noticeable in iron that had been dissolved for a length of time. As this acid could be obtained at any drug store and as it might be useful to many photographers, he believed it to be of sufficient importance to thus notice it. If any desired to make it for themselves they could do so, by using the following formula:

Hypophosphite of potassium	208	parts.
Tartaric acid	300	"
Diluted alcohol	600	"
Distilled water	588	"

Dissolve the hypophosphite in the distilled water and the tartaric acid in the diluted alcohol. Mix the two solutions in a flask, cork the latter well, and put it aside in a cold place for twelve hours. Then carefully decant the liquid into a funnel, the neck of which contains a pellet of absorbent cotton, or, if necessary, pass the liquid through a filter, care being taken that it shall not suffer loss by evaporation. Weigh the filtrate, which contains ten per cent. of hypophosphorous acid. in a tared capsule, and evaporate the alcohol by means of a water-bath, at a temperature not exceeding 140 degrees F.

Then allow the liquid to cool, and add enough distilled water to restore the original weight of the filtrate. Preserve the product in well-stoppered bottles.

Messrs. H. G. Borgfeldt and Faris exhibited some very interesting groups made by flash-light, after which the remaining portion of the evening was occupied by Mr. Borgfeldt in photographing a group of the members present by means of a compound flash powder, the formula of which he had given to the section at a previous meeting. The result of these experiments will be given in the report of the next meeting.

PHOTOGRAPHIC ASSOCIATION OF BROOKLYN.

A REGULAR meeting of the association was held in their rooms at the Arion Hall, on Tuesday the 17th inst., at 8.30 P.M., and was called to order by *President* WAGNER, there being eleven members present.

The minutes of April 3, 1888, were read and approved as read.

The President announced that the programme for the evening would be "Photographing by Magnesium Light," and that the Librarian had provided all chemicals necessary for the light, and the mixing of developers.

Six members reported having brought their cameras with them. The lenses used were Morrison, Dallmeyer and Beck, and plates of Seed's and Cramer's make.

The event of the evening was the first public exhibition of E. H. Riedel's "Anti-Dark Room Developing Box," which proved quite a treat for the members.

This apparatus enables the photographer to develop his plates in any room by day or night. The same utensils and chemicals are used as in the usual operation in the dark room.

Mr. Riedel developed several negatives successfully in the course of the evening in his anti-dark room, while four gaslights were brightly burning, and nine members could conveniently view all his operations. Everybody was pleasantly surprised at the convenience with which the different operations of developing were executed, and the amount of light admitted under which the process of developing was performed without the slightest fog.

The apparatus on exhibition was large enough to develop plates up to 5 x 8, but Mr. Riedel remarked that the apparatus could be made to suit plates of any size.

The anti-dark room consists of a box, the front of which conveniently opens downward on hinges. Here we observe his ingenuity in providing the two armholes, covered by double flaps of cloth, and allowing an easy introduction and withdrawal of the hands of the operator without admitting any actinic light whatever.

On the upper part of the box are two glass plates, one being orange the other ruby; between these two is placed a screen, excluding from the operator the light of illumination.

The process of developing is viewed through the orange-colored plate. To enable the operator to judge of the intensity of the negative, another ruby plate is inserted in the rear of the box.

In developing, Mr. Riedel proceeded in the following way: First he placed the plate-holder with the exposed negative and an empty tray with a light tight cover into the box; the apparatus was then closed, the hands were then introduced through the armholes, the plate was removed from its holder and put into the tray, over which was the cover. The box is then opened and the plate-holder removed. Another tray containing water was now introduced, also the developer. Hereupon the box was closed and the developing then proceeded in the usual way, after which the plate was placed in the second tray containing water. The cover was then put over the latter.

No difficulty was experienced in fixing. The negative proved to be clear in the shadows, and dense enough in the high lights.

For traveling purposes the glass plates are replaced by wooden kits, a special receptacle for the glasses being provided.

Many an amateur who has to use an inconvenient closet for his dark room, will hail this photographic innovation with joy. Photography will no longer be a solitary amusement, since its most interesting part, the development, can be as easily done and viewed in parlor as well as on piazza.

The association was so interested in the experiments of the evening that it was after midnight before the adjournment took place.

CHAS. M. HEID,
Secretary.

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

THE new rooms of the society, at No. 1305 Arch street, were opened to the members for the first time at the stated meeting held on Wednesday evening, April 4, 1888. The chair was occupied by the *President*, Mr. FREDERIC GRAFF.

The Secretary read letters from the Boston and St. Louis Camera Clubs, stating their action in regard to the report of the delegates to the conference to organize the American Lantern Slide Interchange. The letters were referred to Mr. William H. Rau, the representative of the society in the Interchange.

The Committee on Membership reported the election of the following active members: Dr. Charles A. Oliver, and Messrs. Morris Earle and Thomas J. Yorke.

The death of Mr. Joseph Zentmayer, the distinguished optician, formerly an active and more recently an honorary member of the society, was announced by Mr. John C. Browne, who offered the following resolution in regard thereto:

"The Photographic Society of Philadelphia, having heard with deep regret of the death of Mr. Joseph Zentmayer, one of its honorary members, it is moved that the following minute be entered upon the Record Book of the society and a copy of the same be transmitted to his family.

"The members of the Photographic Society of Philadelphia recognize in Mr. Joseph Zentmayer a man of great ability in his profession, and honor his name for what he has contributed to the improvement of the microscope, as well as to the production of original forms of lenses employed in photography.

"They recall with pleasure the friendly, genial intercourse had with him, and desire to express their appreciation of his extraordinary modesty in regard to his own most valuable improvements in the optical instruments named."

Mr. Samuel Sartain and Mr. Frederic Graff added tributes of regret to the memory of Mr. Zentmayer, expressing their personal regard for him, and the resolution was passed unanimously.

Mr. Carbutt presented the society with a lantern slide from a negative made by him at the last meeting in the old room, by the use of his flash-light compound. The slide represented a large group of the members, and was remarkably successful, both technically and as an accurate portrait group of those present.

The Executive Committee reported the practical completion of their labors in regard to the new room, and presented the new quarters in a reasonably finished condition.

Some additions and alterations had been made to the furniture and a handsome new rug purchased for the floor.

A small room adjoining the meeting room had been fitted up as a dark room. The primary object of this room is to afford ample facilities for demonstrations before the society, but the committee also desire that individual members of the society have full and unrestricted use of this room for private work, if it can be demonstrated that this may be carried on without prejudice to the society. To this end the committee have prepared regulations governing the use of the dark room by members.

Contributions in the way of outfit, etc., for the dark room had been made by Mr. John Carbutt, Messrs. W. H. Walmsley & Co., and T. H. McCollin & Co., which were duly acknowledged by the committee.

Dr. Mitchell stated that the Blair Camera Company stood ready to present to the society, if desired, a complete camera for making lantern slides and enlargements. The generous offer was accepted, and a vote of thanks tendered to the Blair Company and the other firms and individuals who had contributed towards furnishing the new rooms.

Mr. W. H. Rau, representing the Lantern Slide Interchange, announced that slides from Chicago and St. Louis would be shown at the Conversational Meeting on April 18th.

Mr. Wood moved that the Executive Committe provide an album to contain portraits and autographs of members of the society.

The motion being carried, Mr. Carbutt offered to present an album for the purpose, which was accepted with a vote of thanks.

The President appointed Dr. Ellerslie Wallace, and Messrs. Samuel Sartain and John G. Bullock, a committee to select the presentation picture for 1888.

Mr. Frederick E. Ives showed upon the screen a remarkable heliochromic reproduction of a natural landscape, produced by a method of his own, which is similar in character to one suggested by Henry Collen, of England, in 1865. Mr. Ives stated that Collen's method, which Hauron, of Paris, first tried to reduce to practice, necessarily failed, because it was based on a false conception of the nature of light, and was an attempt to accomplish an impossibility. They assumed that there are three primary colors of light, and that the mixture of these in various proportions produces all the colors and shades of color in the spectrum. Their plan, briefly stated, was to make a red picture by the action of red light, a yellow picture by the action of yellow light, and a blue picture by the action of blue light, and then to combine these pictures into one, showing the colors, as well as the light and shade of the object photographed. Mr. Ives explained that the color of no part of the spectrum could be reproduced by the optical combination of other parts, and no combination of three colors, simple or compound, could be made actually to reproduce the spectrum. The most that could be done was to combine three colors or pigments so as to counterfeit the spectrum to the eye. Mr. Ives' process was calculated to do this in such a scientific manner that each part of the spectrum must always select automatically, in the in the operation of the process, such a mixture of colors or pigments as would counterfeit it to the eye. Each of his negatives, instead of representing one part or color of the spectrum only, represented one small part exclusively, and several others partially, the degree of representation being graduated to secure the proper admixture of color or pigment in the resulting heliochrome. This was accomplished by employing color-sensitive plates in conjunction with compound color-screens, adjusted by actual experiment upon the spectrum itself. The actual composition of the color-screens would depend upon what color-sensitizers and what reproduction colors were employed. The process could be made to counterfeit all the colors of nature very successfully, and although it was too complicated and costly to admit of general application, he believed it had a bright commercial future.

For demonstration purposes, Mr. Ives employed the simplest form of the process, in which ordinary lantern slides form the heliochromic negatives were projected upon a screen by means of a triple optical lantern and colored lights, but stated that equally satisfactory reproductions could be obtained in pigments.

In the landscape shown, there were a white house, slate-colored barn and fences, yellow straw stacks, green grass in the foreground, dark-green trees in the middle distance (one showing a single bough of deep orange autumn leaves), and distant blue hills. The colors were surprisingly bright, and all approximately correct; but Mr. Ives stated that this result had been secured with a crude form of apparatus, and imperfect adjustment of color screens, and by no means represented the capabilities of the process. A fuller publication of the process will shortly appear in the *Journal of the Franklin Institute.*

At the conclusion of his remarks, Mr. Ives offered to lcan to the society such apparatus as might be necessary for experiments in orthochromatic photography, also to furnish emulsions, etc., and to conduct demonstrations of the various processes before the members.

On motion of Mr. Browne, a vote of thanks was tendered to Mr. Ives for his extremely interesting remarks and the wonderful results shown, and also for his kind offer for future aid in developing this new departure in photography in a practical way.

Mr. Carbutt quoted Mr. Ernest Edwards, of NewYork, as saying that orthochromatic photography had enabled him to make reproductions of paintings, etc., which would have been utterly impossible before the recent discoveries in the art were made, and the process was in constant use by him.

Mr. Suplee showed an interesting series of figure studies, made by the use of Blitz-Pulver and Cramer thirty-five plates. He also showed some lantern slides from the same negatives made on Carbutt's A plates with Blitz-Pulver as a source of light. A ground glass screen was placed 3 inches back of the negatives (5 x 8). The powder being placed 6 inches back of the screen, forty grains or two charges were used, with a stoop of about $\frac{f}{6}$ in the lens.

Some excellent slides were also shown by Mr. Sterling, and some by Mr. Wood, which illustrated in a marked manner the difference in results in landscape photography between the use of long and short focus lenses.

Mr. McCollin showed an improved form of ignitor for use with flash powder, conveniently arranged so as to pack into small space. The powder was ignited at the instant required by the flame of an alcohol lamp being blown against it by a current of air produced with a rubber bulb and flexible tube. After the meeting, Mr. McCollin illustrated the use of the apparatus by making several portrait groups of the members present amid their new surroundings.

Adjourned. ROBERT S. REDFIELD,
Secretary.

THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

SPECIAL MEETING, JANUARY 27, 1888.

President WALKER announced that the object of the call was to elect three Directors and a Treasurer, to fill vacancies caused by resignations.

Dr. Piffard then moved that we proceed to fill the vacancies mentioned, which being duly carried, the following nominations were made: Goodwillie, Canfield, Schuyler, Beach, Stebbins, Bradley.

Mr. Canfield and Mr. Frisbie were then appointed tellers, and, on ballot being taken, the following result was declared, thirteen votes being required for an election: Stebbins, 22; Schuyler, 18; both of whom were declared elected.

None of the other nominees receiving the required number of votes, a new ballot was ordered without result, and upon a third ballot, Dr. Bradley having received a majority of the votes cast, was declared elected.

Upon ballot being taken for Treasurer, Mr. Richard H. Lawrence was declared unanimously elected, after which the meeting adjourned.

REGULAR MEETING FEBRUARY 14, 1888.

President WALKER in the chair.

The *President*—Under the new Constitution under which we are now living, the order of proceeding is very much changed from what it was formerly. The scientific business is first in order, and those who do not care about the business affairs of the association may, if they choose, have an opportunity afterwards to retire, when the ordinary business affairs of the association may be transacted.

The reading of the minutes will be dispensed with, no one objecting.

It is now my pleasure to announce that Mr. Thomas H. McCollin, of Philadelphia, will give a demonstration of "instantaneous photographs taken at night with McCollin's magnesium Blitz Pulver," according to the card which was sent out to the members.

Mr. McCollin—*Gentlemen :* I shall not consume your valuable time in dilating upon the photographic value of the new magnesium flash light. It is a familiar theme to you, as one of your distinguished members (Dr. Piffard) has been a pioneer in this new departure.

Much has been written on the subject in the various journals, but as far as I know only one of them has dwelt upon the great art value of this easily managed source of illumination. It would seem that photography has become stereotyped to one method of lighting the subject, at least to judge from the uniformity of the styles prevalent. When we consider the amount of trouble and expense necessary in rearranging the sky-light and curtains, we cannot wonder at hesitancy on the part of photographers to comply with the demand of the artist, no matter how much he may be convinced of the excellency of the results attainable.

Moreover, many of the artistic lightings entail a great loss of light, and of necessity greatly prolong the exposure. With the instantaneous flash light, any variety of illumination may be secured simply by shifting the source. Those who delight in the Rembrandt effect may revel to their heart's content. The total abolition of the head-rest and its attendant ills of unnatural expression and stiffness of attitude, will add much to the naturalness of the pictures and the popularity of the light with people of taste.

Direct shadows, which are so effective in works of art, seem to be religiously avoided by professional photographers. If, by accident, they do appear, the retouchers pencil is called to obliterate them. Indeed, in a majority of cases the photographer is justified in avoiding them on account of the harsh effects produced; but with the Blitz-Pulver light, the shadows are remarkably soft and transparent and give relief and pleasing contrast.

But I promised not to detain you and shall at once proceed to bring to your notice the preparation entitled Blitz-Pulver. I might add that the powder is so constructed or mixed, that it produces the highest incandescence with the smallest amount of bulk. We consider it (and we think the result will substantiate our assertion) to be the most effective means of securing a high state of incandescence to the magnesia formed by the combustion.

Our powder is so constituted as to be free from picric acid, chlorate of potassa, bichromates, and other highly dangerous compounds. Yet as you will see by the spontaneity with which it goes off, and the brilliancy of the illumination that the supply of oxygen is quickly furnished, so as to evolve a great amount of light. I had better show you this apparatus for flashing it. If you use paper or a match to light it with, you run the risk of scorching your fingers, and you will also have the flash in your eyes, being close to your face, and in the course of time it would be very injurious. Also if you have a piece of tin or a tin pan you cannot very easily raise or lower it to different positions; but with this apparatus you can raise it and have it in any position you desire. It is composed of a little flash pan, an alcohol lamp, a blow-pipe, a hose and bulb, and a reflector. The reflector is not so much to reflect the light, but it is to prevent it from being wasted by being thrown back.

The flame heats the blow-pipe very hot so that the air comes out very hot indeed, and also increases the value of the light. Now I beg to show you how simple it is. [He then produced a flash]. You see it is instantaneous in its flash and produces a very bright light. You observe the quickness of the flash and also the small volume of smoke, which is also light, and is soon dissipated. The quantity of powder being less than one-half of that required by any other preparation, the amount of smoke therefore is reduced to a minimum, and yet the superiority of the results show the great photographic power of the light.

One word as regards the method. We prefer the use of the light unscreened by ground glass or transparent paper because it gives those beautiful lines of light along the nose, on the forehead, and on the cheeks, which you will observe in some of the pictures I will show you. I have a large variety of them, and in order to get an idea of what can be accomplished by the use of the apparatus which I show you, I will pass them around. [The pictures were then passed around.] When the light is subdued by transparent paper or ground glass the pictures are more like daylight pictures, and are therefore not as interesting.

The powder is put up in this shape [indicating]—a box containing twenty flashes, and each flash is in a separate paper, and in making the pictures you have there, the quantity used was two papers—thirty-six grains. Each one of those contains eighteen grains. At first they were weighed but now they are measured. The ordinary powder requires from sixty to one hundred and twenty grains, and of course the smoke produced by other powders is very much greater. You will notice on some of those pictures the beautiful lines of light along the nose, on the forehead, and on the cheeks. We do not use ground glass in any way at all. We only use this reflector for preventing the light from being wasted. We use the reflector at the side to light the shadows, just as you would with ordinary daylight. I will fire another one if you would like me to. As you will see, that powder is placed on this little pan here, and by a squeeze of this bulb it throws out a little tongue of fire which ignites it in this way [illustrating], requiring, as you perceive, only a little touch, the volume of smoke being very slight.

Mr. McCollin then proceeded to explain that the powder was not at all dangerous, nor did it emit any poisonous vapors. He said that for ordinary use only eighteen grains of the power would be required, which would also do for interiors, but in a very large room the powder should be put in two piles near each other so as to be ignited simultaneously.

If you wish to take an audience or a picture in the distance it would require three or four powders, in different parts of the room, preferably on the sides of the room. Do not turn out the gas, for the darkness causes the pupil of the eyes to dilate, and the flash finding them in this condition gives the eyes a fixed and unnatural stare in the print from your negative. The plates, as you are aware, have very little sensibility to gaslight. A piece of board covered with tin-foil makes a good reflector.

The *President*—The Society is certainly indebted to Mr. McCollin for this evening's exhibition. When I reflect on the strides that lighting by magnesium powder has made in the last three or four months, I have to admit that it is wonderful. To my mind this apparatus shown by Mr. McCollin is the simplest and most complete yet exhibited, excepting only the pistol flash for outside work which supplies its proper place.

I now have the pleasure of presenting to you Mr. F. C. Beach, who will read a paper on "A New Transparent Film." (See page 143).

Mr. Beach—I now desire to make some allusion to the matter of packing dry plates. Last summer complaint was made that several plates made by Mr. Cramer were damaged somewhat by the marks of the mats between the plates—the mats seemed to have a tendency to fog the plates; and about the same time I received a letter from Professor H. A. Rowland of the Johns Hopkins University, who stated that he had been on a trip to Norway and had used some of Mr. Carbutt's B plates; and I asked him what the trouble was. In his reply which I will read he says: "The principal fault was that they all had flowing marks which showed by reflected light, and which spoiled many of my best negatives in development. In fact, I have just used a box of Carbutt's transparency plates, all of which were spoiled in this way, or by the breaking of the mat at one end, which made a streak across the plate.

As to the quality of both these plates they were very good. However plates having the quality of the B emulsion are very easily made and the flowing marks always appear after the emulsion has been kept too long before coating. I used the Stanley, Wratten and Wainwright ordinary and instantaneous plates, and none of them showed the markings."

This subject led me to consider a plan of packing plates which should avoid all this trouble and with the co-operation of Mr. Cramer I tried the experiment. I had these four clamps of brass constructed—they are a little bit too heavy but they show the idea—and I told Mr. Cramer to pack his plates face to face and then clamp them with these clamps. He did so and sent me a dozen 8 x 10s and also a dozen packed with the mats and he put the paper boxes holding the plates in a wood box so that there was a play of half an inch. The consequence was, when the expressman brought the box to me I could hear the plate boxes rattle loosely on the inside. I thought that that was an excellent test, coming as they did, from St. Louis, as to whether they would break, and to my surprise I found that the plates packed in this fashion and also in the ordinary way with mats, came entirely uninjured, not a single plate being broken notwithstanding the fact that the glass was somewhat thin.

The next question that struck me was, Does the contact of the films, the scraping, make pin-holes and injure the plates? By clamping them together in this way, film to film, they could not move, and there was no dust between them and no chance for them to get scratched. I exposed and developed a few of each kind. The majority of those packed with the clamps had fewer pin-holes in them than those packed with the mats. The idea is that the plates are to be clamped and then wrapped up in black paper and put in paste-board boxes, and when you receive them you pull the clamps off and set them back in the boxes. They are then all ready to take out, packed face to face. Now these negatives

I have marked. They were not taken with any special reference to the subject. [Passing around to the plates.] On the margin you will find the word "clamp" marked, and those that were packed with a mat have the word "mat" on them. The test will be to look at the dark or opaque parts here [indicating] and see if you can find any scratches.

Mr. Cramer said if it would work it would save him a great deal of trouble. The two clamps for 4 x 5 plates would probably be sufficient, and they should be made of thin steel. [The clamps exhibited were made of spring brass less than an eighth of an inch thick, about 4 inches long by 1¼ inches wide. They clamped the plates like four fingers and in the back were about 1⅛ inches deep.]

Mr. NEWTON—How long had any of them been kept in that condition with their faces together under a pressure, and about how much was the pressure?

Mr. BEACH—I should think it was not more than an ounce, perhaps, for each clamp; four ounces for the whole, when distributed around.

Mr. NEWTON—You have not had them in that condition a long time, have you?

Mr. BEACH—No, sir; these were sent to me the latter part of December, and I took the clamps off as soon as they came.

Mr. NEWTON—My idea is that in six months, under that state of things, they would not be good for anything—they would be fogged. M. Cary Lea's theory of the action of light on the sensitive film is that it is mechanical and not chemical, and if that is so (and he went through a long series of experiments to demonstrate his theory) it would follow that they would be the same as if light had acted on them, as he made pictures from films without exposing them to the light at all, by putting a medallion surface pressure on to the film, and keeping it there for a long time.

Mr. BEACH—That may be true, but here you take two sensitive films and clamp them together.

Mr. NEWTON—It is not a question of what it is; it is a question of the action on the film, of pressure—anything—whether it is flat or anything, but to show that it was so, a medallion surface was used. If two flat surfaces were put on a sensitive film and the pressure kept long enough, it would produce it. That is M. Cary Lea's theory.

Mr. BEACH—The Committee on Dry Plates some time ago investigated the question of mats affecting plates, and I think the decision arrived at was that it was the excessive amount of hypo in the mats, which, through dampness, came out and fogged the film. Now on your theory those marks might be due to pressure, because you take a dozen plates and put them in a box and let them rest on one another. There is a certain amount of pressure, the weight of the glass itself being quite an item.

Mr. NEWTON—The action would be quicker with the hypo-sulphite, but I have never seen a sensitive plate kept with a mat around the edge a long time but what it would show the effect of it. It rather confirmed Cary Lea's theory, whether there was hypo there or not. If you keep the pressure there long enough you will see the mark of it.

Mr. BEACH—The point we made was, that this mark gradually went inward toward the center of the plate, proving that it was due to something else than pressure.

Mr. NEWTON—I showed a large variety of plates and markings, which illustrated how they varied under different periods of time; some had been kept a year and some two years and some one year. It showed how gradually it went along from year to year until the plate was entirely ruined. I of course will not pretend to say that this will be the result in the case I have suggested, but I would advise any manufacturer not to put up a large lot by clamps, under pressure, until he demonstrates that point, and has kept a package at least six months and ascertained at the end of that time that the plates were all right.

Mr. BEACH—Your suggestion is very good.

Mr. NEWTON—It is prudent anyway.

Mr. BEACH—Yes, sir; because amateurs want a plate that they can rely upon every time, one that will take as good a picture six months after it is made as it would if freshly made.

Mr. NEWTON—The question of packing is an important one. The only thing that I ever found that was good for anything was a tin box with grooves in it which was used by those who made them for sale for several years before the gelatine plates were introduced. A tin box with a piece of corrugated tin at the ends so that the plates would fit into them and not be in contact with anything; that was the only thing that I could find. If you put those into any wooden box—white wood or any kind of wood—the wood would affect them after a while even if it was varnished.

Mr. McCOLLIN—When Cary Lea published that theory, I made some experiments on that very subject. I took a plate and laid some paper on it and then laid an ounce weight on it, and I also tried a piece of glass with a weight on it, but it was no good--the plates were fogged. We always used to keep our plates on edge so that there was no weight on them.

A Member—How would humidity or high temperatures affect them?

Mr. BEACH—It would not make any difference, for the makers claim that the plates are thoroughly dried before they are sent out.

Mr. WAINWRIGHT—You said that the Committee on Dry Plates determined that the mark of the mat on the plate was due to the hyposulphite. Is the hyposulphite in the paper? And was that so with all the mats used?

Mr. BEACH—That was so with a large majority of the mats, and they found in time it would gradually spread inward over the plates and fog them.

Mr. WAINWRIGHT—Did they make any comparative estimates?

Mr. BEACH—No estimate was made as to the quantity. Soon after the matter was reported the manufacturers at once went to work and varnished the mats or put paraffine on them so that they would be impervious to moisture and thereby not affect the film. When they did that, there was a great improvement in the plates.

Mr. WAINWRIGHT—Is that done universally now?

Mr. BEACH—I think it is. They either use white paper, which is specially made, so that there is no hypo in it, or they varnish or paraffine the mats. The manufacturers claim the varnishing or paraffining is a great nuisance.

Mr. WAINWRIGHT—Why wouldn't it be as well to use something else than paper?

Mr. BEACH—That has been suggested. Mr. Newton suggested metal boxes, but the trouble with metal boxes is, when you raise the plates out from the box the abrasion of the edge of the box takes off pieces of metal and it sometimes settles in the film. That question was brought up a long time ago.

Mr. STEBBINS—While we are on this subject of films, I would like to exhibit this film here [producing a film]. It is a collodion film, made by a new process. You will observe that it is perfectly transparent and translucent, without any grain. It is tough and is not affected by acids or alkalies that are used in developing, and, for that reason, I think it is going to be the film of the future. I will pass it around.

The *President*—Is it insoluble in water?

Mr. STEBBINS—Yes, it is insoluble in water.

The *President*—I remember, on a very recent occasion, we gave an exhibition of one single powder—Dr. Piffard's flash powder—and we had six different powders produced here that evening. So it is with films. One follows the other as rapidly as you suggest them. If anybody else has any films, bring them out. It seems that every photographer comes around with a new film in his pocket. (Laughter.)

Mr. Stebbins will now read a Paper on Hydroxylamine. [See page 141.]

Dr. PIFFARD—Mr. President, when will the discussion of these papers that have been read to-night be in order?

The *President*—They will be in order now, if you choose to discuss them.

Dr. PIFFARD—As regards hydroxylamine, Mr. President, I have had some experience with it. I have not used the formula which I saw on the blackboard just now, for it seems to me that it would necessitate using up a couple of bottles unnecessarily. But I put one grain of hydroxylamine to every five grains of pyro that was in the developer, and used it as I have used it before; and, I think, with decided advantage. Take whatever developer you are accustomed to, and put one grain of hydroxylamine chloride to every five grains of pyro in the developer, and use it as you have used it before, and you will find that you will have the effect that Mr. Stebbins describes, namely, a slower developer, but a developer in which the shadows are more transparent—not so opaque as in the other—and a handsomer looking negative and one which prints in better shape, giving more detail in the shadows. And by doing that you need not change your developer in any way; but, of course, it will depend on the plate you are accustomed to use; but if you use Cramer 25 or if you use a "Carbutt B" plate you must diminish the pyro. If you put in the hydroxylamine and use any of the rapid plates or Cramer plates or Carbutt "specials," you will find that the hydroxylamine will give you (using your developer as you have done before) better results than you obtained without it. Like any other developer, it is adapted to certain plates better than it is to others, and on rapid plates it works to better advantage than it does on slow plates. That has been my experience.

The *President*—I would be glad to hear anything that anybody has to say on that subject or on any other subject of interest to the society.

Mr. BEACH—I understood Mr. Stebbins to say that in developing the negative he started with two c.c. first of No. 1, and before the development was over added enough to make four cubic centimeters in all.

Mr. STEBBINS—It depends very much on the nature of the subject.

Then followed some business proceedings, Mr. Richard H. Lawrence being appointed delegate to the meeting at Philadelphia regarding the formation of an American Lantern Slide Exchange, and the society adjourned.

THE regular meeting called for Tuesday evening, March 13th, was slimly attended, owing to the great snow blizzard (only thirteen being present), that no business was transacted; after a short informal consultation the meeting adjourned.

On Wednesday evening, March 21st, Mr. W. H. Walmsley, of Philadelphia, read a paper on Photography as Applied to the Microscope and Lantern Slide Making in connection therewith. The new features spoken of in the apparatus was the attachment of a small conical bellows, to the front of the camera, into which the barrel of the microscope projected.

The advantage was that the bellows readily accommodated the movement of the microscope barrel in focusing, and allowed greater freedom in moving the whole microscope to or from the copying camera.

Another improvement was the use of larger milled heads on the microscope focusing shafts, which enabled the operator in manipulating the focusing cords at the back of the camera, to secure a finer focus. As a focusing screen, he advised the use of heavy plate glass with lines scratched on the surface in squares on the side facing the lens. He found this more effective than a slightly exposed, developed and fixed gelatine plate, and took it from an account he saw in the *British Journal of Photography*.

In making lantern slides he preferred the method of reducing in the camera to contact, but failed to state whether he used daylight or artificial light for reducing. He illuminated the microscopic object for making negatives with a MacAllister patent kerosene lamp in which the wicks are placed diagonally to the line of light.

Following the reading of the paper, which was listened to with much interest, about a hundred and fifty slides of microscopic objects were projected on the screen in Mr. T. T. Eckert's, Jr., lantern, which was operated by himself and Mr. Singer.

Many of the subjects were quite interesting, embracing insects, bacteria, so fatal in cholera, sections of various kinds of wood, mineralogical subjects, sections of the human hair and skin, mosses, beautiful diatoms and many other varieties of shells.

He had recently obtained excellent negatives of stained and colored specimens on Carbutt's new orthochromatic plates, and exhibited slides from them; he had also made excellent lantern slides by means of Eastman's transferrotype paper. Those shown were extremely clear and brilliant. He used both the pyro and oxalate developers with equal success.

At the close of the exhibition, President Walker publicly thanked Mr. Walmsley for his kindness in coming from Philadelphia to entertain the society, which fully expressed the sentiment of all the members present.

It was reported that the President, with the advice and consent of the Board of Directors, had appointed the following active members as a Nominating Committee to nominate officers and directors for the new year commencing April 10th, next: Mr. Daniel P. Read, Chairman, Robert Baker, H. M. Grisdale, William E. Bond, W. J. Cassard.

The paper of the evening, read by Mr. Walmsley, will be found on page 202.

◆

[*From Proceedings of the Camera Club.*]

THE WHEEL AND THE CAMERA.

BY E. R. SHIPTON.

I REPEAT, never carry a camera over a small wheel, and add to this, strap it securely down in the case, or wedge it in with the focusing cloth, so that no movement is possible. If careful attention be given to these points, the only drawbacks I have ever discovered to the use of the cycle in connection with photography—occasional damage to the apparatus and dusty plates arising from vibration—will be effectually nullified.

As to the form of camera and apparatus best suited for use in conjunction with cycling, I have little to suggest. Any of the favorite makes, with a liberal number of useful movements, should give satisfaction, provided it have no screws that can under any possibility get out of place; and as to lenses, all I need say is, seeing that weight within certain limits is a matter of small moment, an ample variety for all contingencies may be conveyed. Of tripods, I believe in few, if any, in the metallic line, all I have tried having taken to rattling somewhat after the habit of a traction-engine when in transit. Any good rigid wooden stand should suffice; if it fold in three it can be conveyed as readily on the handle-bar as if it be shorter. Clips for affixing the camera to the cycle wheel I have tried, but, apart from the fact that, as a rule, they are anything but secure, and that they provide scant latitude of movement, I am convinced that it pays far better to carry a tripod, for it is only by chance that your cycle can be got into the exact position required, and the size of wheel now mostly employed renders the use of a clip a back-aching operation. I need hardly say, upon the question of films as opposed to plates, there can, *cæteris paribus*, be no doubt whatever that the former are to be preferred. Weight is a secondary matter upon a cycle, as compared to weight carried by a pedestrian; but yet the use of films will admit of your employing a larger camera, and conveying more baggage.

Charley—So you are to be married!

Harry—Yes, and to the nicest girl in the world! Charley, she's worth a million!

Charley—You don't say so! Harry, I congratulate you, old boy!

Harry—Yes; she's worth a million of such girls as one sees in society!

Charley—Oh! (Charley murmurs as he goes off) Poor devil, how I pity him!

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

H. V. H. writes: Inclosed, you will find several cabinets which I send you to give some hints on in regard to the tone; it is too muddy; the prints have a beautiful purple tone before going into the hypo, but appear to be clouded or muddied by the hypo. My bath is sixty grains strong, slightly alkaline; paper is silvered from one to two minutes, fumed thirty minutes. Toning bath water with gold according to amount of paper to be toned; gold neutralized with bicarbonate of soda; Anthony's liquid gold is used. In hypo, I use about two ounces of a saturated solution of alum, and after coming out of hypo, I put the prints through salt water with about four ounces of a saturated solution of alum added, but I have had the same trouble when I did not use alum at all; alum is used to harden albumen. N. P. A. paper is used. I do not think the prints are blue enough.

A.—From the appearance of your prints we should think that your negatives are somewhat yellow. To obtain good clear prints the negatives should be nearly black or only very slightly brown. The use of an alum bath, nearly saturated with about one dram of hydrochloric acid in the quart is a good thing to clear up discolored negatives. We do not like the use of alum in the hypo bath, it causes decomposition of the hyposulphite of soda and is liable to make the prints muddy. It is better to use about two drams of ammonia to the quart of hypo bath. We have found this the best thing to hold the tone of the original print; otherwise it will look brown and muddy.

Q.—H. M. H. writes: In BULLETIN of March 24, 1888, mention is made of zircon plates for use with streopticon. Can you tell me if such plates are for sale in this country? If so, who has them and what is their probable cost? Can they be attached to a mixed jet burner?

A.—We translated the article you mention from the *Photographische Mittheilungen*, and do not know that the plates are made here. Perhaps a letter sent to Dr. H. W. Vogel, the editor of the paper, will bring you the information you desire. Address Dr. H. W. Vogel, Kurfursten Strasse 124, Berlin.

Q.—F. W. W. writes: Will you please inform me in the BULLETIN what causes prints on albumen paper to turn a dull red in the hypo bath, and not come back to the same tone as when they left the toning bath? I sensitize on a sixty-grain silver bath, three minutes fume, fifteen minutes tone, with bicarbonate soda and gold, ripen an hour before using. I tone till the light parts are bluish and a little reddish in the shadows by holding up to the light and looking through.

A.—If you have printed sufficiently deep to start with, and have toned to give an agreeable color, then the trouble must be, that your hypo bath is dirty or contains too much soda. You should wash your prints in one change of water before putting them into the hypo bath, and it is better if the latter contains about two drams of ammonia in the quart of bath. Print deeper, that may be your trouble.

Q.—W. L. S. writes: I see the following question asked in the BULLETIN of April 14, 1888: "Which is the best acid to use in the silver bath for sensitizing N. P. A. paper?" Now, I use the N. P. A. paper, extra brilliant.

I use no acid of any kind in my bath. Now, do you say the bath wants to be acid or not, and what is the object of using acid? Does the bath want to be acid or neutral?

A.—The silver bath works best when it is just neutral, but a slightly acid bath will also work well if it is kept clean and fully up to strength. When a bath has been made alkaline and placed in the sun to clear it, it should be neutralized with chemically pure nitric acid.

Q.—J. E. S. writes: In Photographic Bulletin for June 26, 1886, Vol. 17, No. 12, page 367, there occurs about fourteen lines relative to the preparation of zinc plates for the printing press. I desire further and more detailed information—how and where can I obtain it? I want some work that will give thorough instruction in that line, as also the use of the camera and dry plates in connection for instantaneous work. What I desire to produce most is outline zinc work for "cuts" in newspaper and kindred work.

A.—We do not know any special book upon the preparation of zinc plates for the printing press; but the "Practical Guide to Photographic and Photo-mechanical Printing Processes," by W. K. Burton, contains much valuable information (page 303) on this subject and can be obtained from our publishers.

Q.—J. C. M. writes: Can you inform me (through the Bulletin, next issue) what makes my prints turn a pinkish purple on putting in the wash water before toning? I use river water, earthen and wooden vessels—new? I notice the prints do not tone well—are a yellowish brown.

A.—It is probable that the water you use contains chlorides and organic matter; this would produce the effect you mention. The brown tone of the prints is due to too weak silver bath and the printing being not deep enough; also perhaps to dirty hypo or the latter with too much carbonate of soda in it.

Views Caught with the Drop Shutter.

P. Smith & Co., of Cincinnati, send us an excellent photograph of their extensive dry plate department, in the new store 156 and 158, West Fifth street. The picture shows a full stock of plates of all brands.

Lafayette W. Seavey, the well-known artist, is engaged upon an entire new outfit of backgrounds and accessories for Falk's recently burned-out gallery at the corner of 23d street and Fifth avenue, New York. Mr. Falk lost everything, even to his negatives, which numbered half a hundred thousand. Mr. Seavey has already painted thirty grounds of new design for Mr. Falk, and has orders for more. Copies of most of these new designs will, we understand, be offered for sale.

J. F. Allen, of Owensboro, Kentucky, had his studio burned to the ground on Sunday, April 15th, and unfortunately was not insured, his policy having expired only a short time before. He will be glad to get a position in a first-class studio as operator, or good crayon and bromide artist, as he is now financially at the bottom of the ladder.

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ANTHONY'S
Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

MAY 26, 1888.

Vol. XIX.—No. 10.

THE EXHIBITION OF THE UNITED SOCIETIES AT BOSTON.

As was obviously our duty to the readers of the BULLETIN, we went to Boston to see what had been done during another year by the societies of Boston, Philadelphia and New York in advancing the art of photography. As is often the case at this time of year, the weather was extremely disagreeable ; nevertheless the attendance was excellent and the interest shown by the visitors in the work presented spoke well for the appreciation of photography in the Art City of the East.

The exhibition was held in the large room of the Boston Art Club, which is located in the Back Bay District and near the many handsome new structures with which the citizens of Boston are adorning the city. It is but a short ride from the business center of the town and through some of the finest streets on the American continent. We noted these things, as we cannot but believe that to have these exhibitions where people will visit them, they must be located at points easy of access and where people of good taste will be inclined to go.

As to the exhibition, there are a few things we should like to have seen differently arranged. In the first place, the separation of the various pictures of the exhibitors was very annoying. We had to walk around the room several times before we could find all the numbers of the pictures belonging to one collection. Then, there were too many pictures allowed to be exhibited by many of the competitors ; and finally large pictures, often bromide prints, usurped the lower levels to the crowding out of small pictures, which were in many cases placed above and entirely out of view. We don't say these things in the way of fault-finding, but rather as suggestions for future exhibitions. This is only the second annual collection of the united societies and there is much to learn all round. We have no doubt that the committee did the best they could, but there is always room for improvement, and our motto is always "Aim higher." That the committee did some excellent work is shown in the large number of pictures (over twelve hundred) which they distributed over the walls of the room in generally good order, except as we have noted above.

The judges of the exhibition were J. Eastman Chase, the art connoisseur of Boston (*Chairman*); J. Foxcroft Cole, artist; Joseph R. De Camp, Art School in-

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structor; John Dunmore, lantern slide maker, and Frank Russell, photographer, of Lawrence, Mass.

We will now endeavor to give our readers an idea of our impressions of some of the fine exhibits, of which there were a great many. Indeed, we noted very few pictures that were not of a high order of merit.

Professor Henry A. Rowland of Johns Hopkins University, and of the Society of Amateur Photographers of New York, received a diploma in Class 1—Landscapes, over 6½ x 8½—for some of the most beautiful pictures we have seen in photography for a long time. He also received a diploma in Class 14—Transparencies—for positives on glass from the same class of negatives. These pictures were views taken in Norway, and exhibited some of the most beautiful cloud and water effects ever caught upon a photographic plate. They were entitled "Nesdal Amphitheatre, Norway," "Loenvand," "Strynsvand," "Norangsfjord," all in Norway. The clouds hovering about the tops of the mountains in woolly patches, and the beautiful effects of light and shade upon the dancing surface of the water lent a charm to these pictures that was very fascinating. They also exhibited great beauty in light and shade generally, telling of the softness and clearness of the original negatives. The transparencies by the same exhibitor were from the same class of subjects, Norwegian scenery, and showed the same beautiful effects in light and shade as the pictures on albumen paper, except that the transmitted light brought out perhaps a little more clearly their exquisite beauty. Taken altogether, the pictures of this exhibitor were the most beautiful pieces of photographic art in the whole exhibition.

Frank M. Sutcliffe, of Whitby, England, received a diploma in Class 2 for pictures in "Landscape," and another in Class 8 for "Animals." In this exhibit we noted some very artistic work. "Whitby Harbor" was a very beautiful picture, the light effects reminding one of Turner's "Venice," they were so soft and low. "Waves at Whitby" was excellent for its fine water, the waves being particularly good. Another interesting study was "Among the Turnips," a tandem team plowing, and a very artistic effect, the horses and driver standing out in bold relief against the rough earth of the field. A group, "Fishermen," was also very artistic, and a head study of an "Old Woman" was excellent. "Springtime," a picture of sheep, was also very fine. Altogether, this is an uncommonly fine exhibit, and well worthy of the skilled professional photographer who sent it to Boston.

John P. Gibson, of Hexham, England, also obtained a diploma for landscapes. All his pictures were very fine. Those that pleased us best were "The Braes of Allen" and "After Sundown, October," the fine effects of light and shade in clouds and foliage, being very beautiful.

In Class 3—Marine Views, Surf—the diploma went to Horace A. Latimer, of the Boston Camera Club, his views of the "Surf at Marblehead" being uncommonly fine.

The same exhibitor received a diploma in Class 15—Lantern Slides—in which he showed some excellent work of a clean, sharp character, and good tone.

In Classes 4 and 5—Marine Views, Sail—"Figure Compositions over 6½ x 8½,—no awards were made.

In Class 6—Figure Compositions 6½ x 8½ and under—Mr. George B. Wood, of the Photographic Society of Philadelphia, received the diploma. He also received a diploma in Class 8—Animals. It is needless to say that all the pictures of this exhibitor were gems, they always are. Every point that will give a subject an artistic appearance is taken advantage of; and the care with which every detail is studied makes a view of these pictures an education in art photography.

Among a lot of gems (about thirty in all), we noted some that were more than ordinarily interesting. "A Quiet Day" was a beautiful woodland scene, with some exquisite work in foliage; one of those bits of photographic art that are captivating in the beauty of the details in the picture. "Old Barn and Chickens" was another gem, full of art study. "The Dog Show," several little girls sitting with dogs in their laps, was funny in addition to being a capital instantaneous shot. "Driving Sheep" was also an excellent study in animal life. Yet, another good study was "Little Hard of Hearing," a boy yelling into the ear of a deaf man, who holds his hand to his ear to assist him.

In Classes 9 and 10—Still Life—Architecture—no awards were made.

In Class 11—Interiors—Miss Annie L. Richards, of Boston, received the diploma. In this exhibit the "Old Wharf at Squantum" was very good, showing clear and sharp photographic work, with artistic feeling. "A June Sunset" was also very beautiful, particularly the cloud reflection on the water.

In Class 12—Enlargements—no awards were made.

In Class 13—Instantaneous Effects—David Pepper, of the Photographic Society of Philadelphia, received the diploma. This exhibit consisted of a number of excellent pictures of hurdle races, high jumps, and bicycle races, that were remarkable for their sharpness.

In Class 16—Foreign Pictures—John C. Lee, of the Boston Camera Club, received the diploma for pictures taken in Russia, Holland and Germany. These pictures were very interesting and well taken. But there were two little gems by the same exhibitor that pleased us very much; these were "Woods at Riverdale, N. Y.," a charming little piece of woodland scenery, full of detail and beauty in light and shade; and the "Yacht Gretchen, off Egg Rock," a bit of pretty marine work of great beauty and clearness.

Henry H. Suplee, of the Photographic Society of Philadelphia, took the diploma in Class 17—pictures by any process not before publicly exhibited—for a set of pictures made by the magnesium flash-light at night.

In Class 18—Photomicrographs—Dr. R. R. Andrews, of the Boston Camera Club, received a diploma for eight photomicrographs taken at night and illustrating the development of the human tooth. The work was of the highest order and well worthy of the diploma.

In the Special Ladies' Class—Miss Catherine Barnes, Albany, N. Y., of the Society of Amateur Photographers of New York, received the diploma for a number of very artistic studies, including groups, views, and a number of good portraits.

We must continue our observations in the next issue of the BULLETIN.

THE AWARDS AT BOSTON.

The following is the list of awards made at the second annual joint exhibition held in Boston, May, 7th to 12th.

CLASS No. 1. Professor Henry A. Rowland, Johns Hopkins University, Baltimore, New York Society.

" 2. Frank M. Sutcliffe, Whitby, Yorkshire, Eng., and John Patterson Gibson, Hexham, Eng.

Class No. 3. Horace A. Latimer, Boston, Mass., Boston Club.
" 4. No diploma awarded.
" 5. No diploma awarded.
" 6. Geo. B. Wood, 5502 Germantown avenue, Philadelphia, Philadelphia Society.
" 7. No diploma awarded.
" 8. Frank M. Sutcliffe and George B. Wood.
" 9. No diploma awarded.
" 10. No diploma awarded.
" 11. Miss Annie L. Richards, Boston, Mass.
" 12. No diploma awarded.
" 13. David Pepper, 1827 Spruce street, Philadelphia, Philadelphia Society.
" 14. Professor Henry A. Rowland.
" 15. Horace A. Latimer.
" 16. John C. Lees, 145 Cedar street, Roxbury, Mass., Boston Club.
" 17. Henry Harrison Suplee, 339 West Chelten avenue, Germantown, Philadelphia, Philadelphia Society.
" 18. Dr. R. R. Andrews, Cambridge, Mass., Boston Club.

Special Ladies Class, Miss Catherine Barnes, Albany, N. Y., New York Society.

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EDITORIAL NOTES.

Mr. Henry J. Newton, the President of the Photographic Section of the American Institute, at our suggestion, sent to the Boston exhibition a number of very beautiful studies he has recently taken in Central Park, New York. With his usual modesty he did not think them worthy, and it was only on strong urging we succeeded in getting him to consent. Unfortunately the pictures arrived too late, and were never exhibited. There are some of them that are superior to any pictures of the same kind exhibited at Boston, and these consist of groups of sheep grazing. In these pictures the light and shade is beautiful beyond description, they must be seen to be appreciated, and we hope Mr. Newton will exhibit them at one of our societies soon; or what will perhaps be better, make some lantern slides and show those. It is not often we see such pictures, and we wish all our friends to enjoy them.

Mr. W. Jerome Harrison, of Birmingham, England, and Dr. Arthur H. Elliott, of the Bulletin, have joined forces and are busy at work upon "The International Annual of Anthony's Photographic Bulletin," which is to be issued about July 1st, next. This will be a volume about the size of the "British Journal of Photography Almanac," and contain papers from writers upon both sides of the Atlantic. It will be illustrated with a number of full-page plates and many cuts to assist the descriptions in the papers. It will also contain tables, formulas, etc., of a thoroughtly useful character. The readers of the Bulletin will find it a desideratum and full of excellent photographic information.

The Vergara Film, which has created such a furor on the other side of the Atlantic can now, we understand, be obtained from our publishers. There is no doubt this is a step in advance. A flexible material, transparent, and a perfect substitute for glass has long been looked for by photographers. This substitute is now offered in the Vergara Film and from all we can see and hear, it is destined to play a most important part in future photography. Like everything else new, it has some peculiarities that have to be learned, but when we say that the *modus operandi* is as simple as with a glass plate, our readers can judge for themselves as to the advantages of this new substitute for the glass dry plate.

Every now and then our photographic societies get a particularly interesting subject for discussion at their meetings, and some good points are brought out. Quite recently the Photographic Society of Philadelphia took up the subject of intensification and the discussion brought out a number of very interesting opinions from some of the best workers in our art. Our readers should refer to our reports of these meetings, they nearly always contain much good information.

Mr. T. J. Kuntz, of Syracuse, sends us a set of excellent character studies that are very well done and interesting. They represent one of those odd specimens of mankind to be found in the lower order of society that are ne'er-do-weel's, and at the same time have an amount of wit and humor that mark them as more than ordinarily interesting specimens of their class. The pictures are finely taken and tell of the different phases of humor from frowns to broad grins with admirable force. They are an interesting addition to our collection.

A capital sunset picture, taken about two month's ago, comes from our good friend J. B. Heyl, of Bermuda. It was made at 5.30 in the evening, and the cloud and water effects are very beautiful. Our friend complains about one small spot on the negative, which also shows in the print, but we think he could make a very beautiful lantern slide from the center of the picture, and we hope he will try to do so.

Photographs of dogs are by no means easy of execution. Mr. Charles T. Stuart, of Hartford, Conn., is one of the most successful men in this direction, and his work is always full of life and study. We recently saw some pictures of dogs made by him, and they were so good we have requested Mr. Stuart to give us some copies.

In the same line of work we have also received two handsome pictures of dogs from A. M. Costello, Great Barrington, Mass. These are as fine work as we have ever seen. Clear, sharp and life-like beyond description and with the speaking beauty that every lover of animals enjoys. Our good friend Stuart must look to his laurels, for it is hard to choose between these new pictures, and the beauties we have so often admired from his studio.

Mr. H. B. Snyder sends us an uncommonly good moonlight view taken between 8.30 and 10.30 P.M. It is so good that the details in the shadows are excellent, and objects half a mile away are well delineated. Indeed, at first we thought it was an ordinary daylight view. The picture was taken on a Stanley plate and speaks well for its extreme sensitiveness.

All communications for the columns of the Bulletin *should reach us on Monday preceding the day of issue, to insure their publication at that time.*

BOSTON CORRESPONDENCE.

The Boston Exhibition.—A large display of Photographs by Amateurs.—General Observations.

The second joint annual exhibition of the Philadelphia, New York and Boston Photographic Societies held at Boston has come and gone and has shown that amateur photography is still in the lead of professional work, particularly in regard to its artistic side. The exhibition was held in the Boston Art Club's gallery, a room about fifty feet square, very perfectly lighted and arranged.

Admittance was free, but by special arrangement, the rules relative to labeling the frames was suspended, and no knowledge of the titles of the pictures could be obtained except by the purchase of a catalogue. It was expected that the profit on the catalogue sales would compensate for the running expenses of the exhibition, which in a great measure, I am informed, was the case.

The weather during the week of the exhibition was very unfavorable, yet it is said the total attendance was over six thousand, which indicates that in Boston at least, photography has special attractions. Every evening well-conducted short lantern exhibitions were given which drew crowds, and filled the large room. Mr. William Garrison Reed operated his specially constructed lantern arranged with an automatic muslin intercepter, to cut off the light somewhat quicker during the change when dissolved from one light to the other, while Mr. Edward F. Wilder read the titles of the pictures. On one evening subjects illustrative of New York were shown; another evening Philadelphia; another Boston; and on a fourth evening a miscellaneous assortment. Every evening the prize set of lantern slides was displayed. The only unpleasant feature about the evening exhibitions was the lack of temporary seats; the majority of those in attendance having to stand while the pictures were exhibited.

Going up the circular stairs to the main entrance of the Art Club Room, was to be seen hung on a light walnut frame on the left of the landing, the transparencies for the exhibition, some of which were remarkably fine, but they were so poorly lighted (the window for illuminations being partially stained glass and so far away) that their beauty could not be readily observed.

In the evening illumination was obtained by a gas chandelier, somewhat dim and poorly located.

It is rather strange, considering that the gallery is so beautifully lighted at night by electricity, that a better device illuminated by the same agent (as it could easily have been done) was not improvised.

On entering the main entrance, one was struck with the multitude of small pictures, and a general rigidity, if that word may be used, of the framing and hanging of the frames.

There appeared to be no marked variety in the frames or in their manner of grouping. Aside from this, it was readily observed that the room was too small for so many pictures; for several frames of small sizes were hung above one's head, making it impossible to see their technical merits without the use of an opera-glass, while on the other hand, nearly a dozen frames had to be set on the floor. Past experience has shown that to properly see photographs of small sizes, they should be comprised in a belt about four feet wide, the center of which should be about four and a half feet from the floor. They necessarily require more space than paintings, hence more care should be observed in regard to hanging. In this exhibition it is quite evident the committee had a superabundance of small work to hang, and were compelled for want of space to put some of it as high as eight or ten feet from the floor. It was also noticeable that some exhibitors, disregarding the advice of the committee, requesting that a few choice pictures be sent in preference to many, contributed a very large quota, one sending as many as a hundred and seven.

In order that justice may be done to all exhibitors and that the committee may not be embarassed, it would seem desirable that the number of a certain size or sizes of pictures any one exhibitor may contribute, be limited. Such a plan might very materially reduce the total aggregate of pictures, but it would allow more space for their proper display and add much to the enjoyment of looking at them.

The experiment of hanging the pictures without labeling was quite an improvement; the frames looked much better without labels.

But as each exhibitor's exhibit was scattered here and there, it became a tedious matter to search through the catalogue to find the subjects. It showed that this system will not work perfectly, unless each exhibitor's exhibit is hung in a group by itself, as was done at Philadelphia in 1886, or after the frames are hung they be numbered consecutively at one point in the room and going around in regular order. The numbers in the catalogue should then be made to correspond. No doubt this latter plan would entail a large amount of work. The system of grouping each exhibit as far as possible by itself appears to be the best and is easily catalogued.

Probably the most attractive pictures in the exhibition were Professor H. A. Rowland's "Norwegian Views," Frank M. Sutcliff's "Studies," and Mr. Redfield's figure composition entitled "Victuals and Drink."

The New York and Philadelphia exhibits were displayed at the rooms of the New York Society on Friday evening and all day Saturday, May 17th and 18th.

VISITOR.

LOOKING BACK; OR, THE OLDEN DAYS OF PHOTOGRAPHY.

BY H. H. SNELLING.

(*Continued.*)

II.

WE remember the advent of photography, or, rather, the daguerreotype, into America. It was in 1838 that Dr. Guerard of Paris, with the details of the method of production, arrived in New York, and announced a lecture on the "wonderful invention" at the Broadway Tabernacle—the largest audience-room in the city. All New York became highly excited, and on the night of the lecture the house was crowded. Daguerre and the daguerreotype were the exciting themes for many weeks. During this time Professors Morse and Draper were quietly working out the problem of the capability of the process. The specimens exhibited by Dr. Guerard were far from perfect, and the time required in the camera was so long that doubts were felt that it could not be made of practical use, and therefore would exist only as a "nine days' wonder." The honor of taking the first daguerreotype in America lies between Professors Morse and Draper, but this is not of so much importance as who first made it practicable as a business. When it was introduced into America it was in a crude state, but the American mind, with its usual readiness and intelligence for solving such problems, went actively and persistently to work on the daguerreotype. It was not long before the public were informed that they could have their likenesses taken by the wonderful daguerreotype process, and although skepticism on the practicability of the process had followed the excitement of its announcement, curiosity was the principal inciter to the daguerrean galleries.

The reduction of time in the sitting for a likeness was of slow attainment. For two or three years the tedium of sitting prevented any perfect results, but the pioneers persistently persevered and the daguerreotype gradually found favor with men and women, especially the latter. Some progress was made in the reduction of time, and the comparison of the American daguerreotype with that produced in Europe showed so favorably for the American that our daguerreotypes became famous everywhere. This reputation the American daguerreotype never lost; our daguerreans outstripping competition in other countries, always improving on European improvements and improving on points not touched upon by their foreign brethren, especially in the reduction of time and in delicacy of detail. The glare of the background was at first very detrimental to the picture, and to the American photographer is due its removal and the introduction of "deadened" background. For a long while this glare on the daguerreotype prevented the image from being seen in all lights. The light must fall on it just so or the image was a blank. The improved background rendered it visible, however, when the light fell upon it.

The introduction of bromine as an accelerator was a source of great pleasure to the practical daguerrean and almost solved the problem of instantaneous pictures. Now was the time when daguerreans began to spread themselves. Instead of the narrow, contracted apartments up three or five stories and with almost any kind of side-light or skylight, commodious operating rooms, with spacious skylight and ample distance for any kind of work, with elegant reception rooms on the first or second floor, cozily furnished, and the walls adorned with the best of specimens of the owner's work, took their place.

They began to crow, too, and justly, over their brethren across the big salt-water pond, for they were outstripping them in every point of quality, mechanical and artistic. The boldness, sharpness, distinctness and pose were unparalleled. At first this superiority of the American daguerrean was not only a surprise, but a wonder; but when the increased knowledge, taste and skill of the "operator" was conceded, and the improved and most excellent apparatus with which the American inventors had furnished him, both surprise and wonder ceased and admiration took their place. The Frenchman shrugged his shoulders and acknowledged the corn with generous heartiness. The Englishman confessed the fact but was unwilling to concede any superiority over himself in skill or taste, and ascribed the contrast between his own pictures and those of America to the clearness and actinic force of our atmosphere, while theirs was the reverse in every respect. We certainly can admit that this difference of atmosphere goes far towards explaining the difference in results. The fact, however, as to the superiority of the American daguerreotype remains, and we must needs be proud of it as an evidence of American taste and skill. We are now referring to the men who produced these superior daguerreotypes. There were many who entered the ranks of the profession who were incapable of knowing what constituted a good picture, and, of course, their productions were mere abortions and they could obtain custom only by reducing the price to ridiculous figures. We used to call them dog-in-the-manger views.

One of these Cheap Johns came in one day to show us a daguerreotype of mother and child. The mother was seated in a common chair, bent forward to such a degree as to form with the position of the child a truncated right-angled triangle; the child was placed between her knees with his head thrown back and a stick of candy in his mouth. The position of the mother was caused by holding up the child's dress in a knot over the little fellow's head. The mother's face was looking at her child, while the eyes were looking upward, either at the ceiling or the operator (he was a tall man); it was literally turned up, chalky light and gray shadows; it was in reality an abortive caricature, and yet this fellow had the audacity to ask me if I did not think it was an excellent artistic picture, with the request to give it a "first-class notice in the next number of the journal." At first we thought him quizzing, but he was so persistent that we were obliged to tell him, that, like a bad preacher he has mistaken his calling. It was impossible to visit these minor galleries without a shock and a disagreeable sensation of the degradation brought to the daguerrean art by these shysters. It is true that the individual had a brief career, yet the ranks were kept full by new claimants for public favor. First-class daguerreans, who had secured the esteem and admiration of the refined and well educated suffered little from these miserable creatures, but the intermediate class were seriously hurt by them, if not entirely destroyed.

When the Lewises came to the front with their variously improved apparatus, daguerreotypes made a stride forward, as much of the tedium of the operating room was modified. The daguerrean's perplexities were not all from the state of the atmosphere or the uncertainties of the chemicals—sitters were a constant source of trouble. The most absurd conditions were exacted—where they could be—or unreasonable fault-finding would be indulged in, and it was often very difficult for the operator to keep his temper. In one case, at least, it was impossible. One of the "great men" of that day entered one of the first-class galleries to procure a likeness of himself and persisted in sitting in a position that the operator knew would give him a very ridiculous picture. After trying every argument and illustration in vain, the operator took a half plate impression as he sat, finished it and taking it to the gentleman and holding it up before his eyes, exclaimed, "Now, don't that make you look like a fool?" The gentleman assented good-naturedly and told the operator to pose him as he pleased, and was delighted at the change for the better in the several pictures. We were in Brady's gallery one day when a tall, elegant-looking lady came in for a full-length picture. The result of the first sitting was superb; it would have been impossible to improve upon it, yet she found many faults in it, and insisted upon another trial. The operator showed me the daguerreotype, with the remark, "What shall I do? I cannot make a better one to save my life!" We advised him to simply make a feint of another sitting and show her the first picture again. He did so and it pleased her better, but it was not satisfactory, and he must try again. Five times this sham work went on, and when the picture was shown to her for the sixth time she went into rhapsodies over it. It was perfection and she knew that that could not be reached the first time. A similar incident took place in another gallery when the proprietor told the lady that it would be useless to repeat the sitting as it was impossible to do better, and the lady went away in a huff leaving her picture.

Some people had queer notions about daguerreotypes and the method of making them, and their curiosity led them into laughable but annoying freaks under the operation. A young Connecticut farmer entered Thompson's gallery to have his "picture took" with his hat on. It was a fashionable silk which he had undoubtedly just purchased, and he was proud of it. He asked all manner of questions as to *modus operandi* and seemed determined to get the worth of his money in information alone. He was placed on the chair in good position and the light turned on to the plate in the camera, while Mr. Thompson, with watch in one hand and black cloth in the other, and with his back to the sitter watched the minute hand. What a sight met his eyes when he turned around to put the slide over the plate. There sat the Yankee, bent forward, his hands upon his knees, his eyes bulging out like a lobster's, and his mouth wide open, astonishment, curiosity and apprehension strongly marking his features. That picture was reserved for the curiosity shop; and he was told he must sit again and that he must keep still. The second attempt was also unsuccessful, for he got up from his chair and began peering into the camera. Other attempts were made with like results. Now, Mr. Thompson had a daguerreotype of the writer with the hat on and he thought he would quiz the man with it, and showing it to him asked, how he liked it. "Oh! it is spenkin' good! How Sal will laugh at it!" And he carried it off triumphantly. However, he returned to have it changed as was supposed he would do.

(*To be continued.*)

THE LITERATURE OF PHOTOGRAPHY.

BY W. JEROME HARRISON, F. G. S.

(*Continued.*)

Vol. II, is styled *Journal of the Birmingham Photographic Society*: 1857; pp. 470, and index, 5 pp.; fortnightly, price, 4d. Jersey, published by the editor, T. Sutton, B. A.

Vol. III, for 1858; pp. 307, and index, and contents.

Vol. IV, for 1859; pp. vii and 307. Published by Sampson Low, 47 Ludgate Hill, and C. Le Feuvre, Jersey.

Vol. V, for 1860; pp. v and 349.

Vol. VI, for 1861; pp. v and 359.

Vol. VII, for 1862; pp. 311 and index.

Vol. VIII, for 1863; pp. 317 and index.

Vol. IX, for 1864; pp. 338 and index.

Vol. X, for 1865; XI, for 1866; XII, for 1867.

Amalgamated in February, 1868, with *The Illustrated Photographer.* Thomas Sutton—most versatile and argumentative of photographers—removed to Redon in France, soon after the demise of *Photo. Notes.* From 1871 to 1874, he acted as French correspondent of the *British Journal of Photography.* He died at Pwllheli, North Wales, on March 19, 1875.

(62.) Photographic Opinion. I can learn little about this periodical, except that in 1870 the "*Illustrated Photographer*" was united with it.

(63.) Photographic Quarterly Review. Edited by Thomas Sutton, B. A. Two numbers only published (for June and September, 1860), 8 vo., one shilling each. Published by S. Low, London; printed by C. Le Feuvre, Jersey. The June number containing 144 pages.

(64.) PHOTOGRAPHIC RECORD AND AMATEUR'S GUIDE (THE). Edited by John Rowland, fortnightly, from June 1, 1856, to April 1, 1857. Altogether eighteen numbers. 8vo., at 2d. each. Total printed matter, 182 pp. (including advertisement sheets). Published by John Rowland, 4 Cecil street, Strand.

(65.) PHOTOGRAPHIC RECORD (THE). The organ of the Manchester Amateur Photographic Society; quarterly, price 3d. No. 1, for October, 1887. 8vo., pp. 28 (future numbers twenty-four pages only). Editor, Mr. W. Stanley, 21 Howard street, Eccles New Road, Salford. Sold by George Wheeler & Co., Printers, 46 King street, West, Manchester.

(66.) PHOTOGRAPHIC TIMES (THE). *A Chronicle of the Progress of the Photographic Art.* Four vols. (two numbers only published of Vol. IV). November, 1861, to Jannary 15, 1865. Fortnightly. Price, 1d. 4to.

Vol. I, November, 1861, to December, 1862; pp. 236. Published by John Rowland, Jr., 409 Strand. Vol. II, for 1863, pp. 188; and Vol. III, for 1864, pp. 188. Published by Thomas Kingham, 409 Strand. Vol. IV, No. 78, for January 15, 1865. Published by J. Clayton, 265 Strand.

(67.) PHYSICAL SOCIETY OF LONDON, PROCEEDINGS OF (THE). 1874–88 + 8vo. The headquarters of the society are at the Science Schools, South Kensington. All papers read before the society are also printed in the *Philosophical Magazine.*

(68.) POPULAR SCIENCE REVIEW (THE). *A Quarterly Miscellany of entertaining and instructive articles on scientific subjects.* Edited (vols. I and II, by J. Samuelson; III to XV, by H. Lawson). Fifteen vols. London. 1861–76. 8vo.

New Series. Edited by W. S. Dallas. Vols. I–IV and nos. 17, 18, 19 of vol. V. 1877–81 ||. 8vo.

Altogether 20 vols., all published at 12s. each; bound by Bogue, 3 Trafalgar square, London.

In this pleasantly written magazine the principal contributors on photographic subjects were J. Traill Taylor, W. Crookes and H. Lawson.

(69.) PORTFOLIO (THE). An artistic periodical. 1870–88+. Edited by P. G. Hamerton. Folio. Monthly. Price, 2s. 6d. Seeley & Co., 46 Essex street, Strand.

Each number contains 24 pp. of letter-press and two plates, etchings, photogravures, etc.

(70.) QUARTERLY JOURNAL OF MICROSCOPICAL SCIENCE. Edited by Edwin Lancaster and George Busk. 8 vols. 8vo. London. 1853–60. Continued as:

(70 *a.*) QUARTERLY JOURNAL OF MICROSCOPICAL SCIENCE; including the transactions of the Microscopical Society of London. New series, 1861–88+. Price, half a crown. J. & A. Churchill, New Burlington street.

The *Microscopical Journal,* 1841 and 1842, two vols. Edited by D. Cooper and G. Busk; and the *Transactions of the Microscopical Society,* 1844–52, three volumes; may be considered as predecessors of the *Quarterly Journal.*

(71.) QUARTERLY JOURNAL OF SCIENCE (THE). Edited by James Samuelson and William Crookes, 7 vols. 8vo. 1864–70. J. Churchill & Sons, London. Continued as:

(71 *a.*) QUARTERLY JOURNAL OF SCIENCE (THE) and Annals of Mining, Metallurgy, Engineering, Industrial Arts, Manufactures and Technology. Edited by William Crookes. New series. 8 vols. (VIII to XV). 8vo. 1871–78. London.

3. Horseshoe Court, Ludgate Hill. Continued as:

(71 *b.*) QUARTERLY JOURNAL OF SCIENCE. 1 number, 8vo. 1879. London: 3 Horseshoe Court. Continued as:

(71 *c.*) MONTHLY JOURNAL OF SCIENCE. Number 2–12 (vols. XVI). 8vo. 1879. Price, 1s. 6d. Continued as:

(71 *d.*) JOURNAL OF SCIENCE (THE), *and Annals of Astronomy, Biology, Geology, Industrial Arts, Manufactures, and Technology.* 1880–85‖. Monthly. Price, 1s. 6d. Published at 3 Horseshoe Court, Ludgate Hill.

Several articles and many notes on photography appeared in the Q. J. S. Magazine ended with the number for December, 1885.

73. RECREATIVE SCIENCE. A record and remembrancer of intellectual observation. 3 vols. 4to. 1859–61. London: Groombridge & Co. 7s. 6d. per volume. Continued as:

(73 *a.*) INTELLECTUAL OBSERVER (THE). Review of natural history, microscopic research, and recreative science. 12 vols. Royal, 8vo. 1862–68. London: Groombridge. 1s. 6d. per vol. Continued as:

(73 *b.*) STUDENT (THE), AND INTELLECTUAL OBSERVER OF SCIENCE. Literature and art. 5 vols. 8vo. 1868–71. London: Groombridge. 10s. 6d. per vol.

Several papers and many notes on photography are contained in the above volumes, written principally by J. W. McGauley, C. M. Archer, T. A. Malone, S. S. Baxter, and J. Sidebotham.

(72.) QUEKETT MICROSCOPICAL CLUB, (JOURNAL OF THE). Edited by Henry F. Hailes, 1868–88+. 8vo., price, 1s. Williams & Norgate, 14 Henrietta street, Covent Garden.

The meetings of the Quekett Club are held at University College, Gower street, on the second and fourth Fridays of each month. Annual subscription, 10s. Hon. Secretary, Mr. G. C. Karop, 198 Holland road, Kensington, W. The club was established in 1865.

(74.) STEREOSCOPIC MAGAZINE (THE). A gallery of landscape scenery, architecture, antiquities and natural history, accompanied with descriptive articles by writers of eminence. Edited by Lovell Reeve, 1859–65‖. 5 vols., 8vo. Monthly. Price, 3s. 6d. Lovell Reeve, Henrietta street, Covent Garden.

(75.) SUNBEAM (THE). A PHOTOGRAPHIC MAGAZINE. Edited by Philip H. Delamotte, Professor of Drawing in Kings College, London. Six parts, folio. Price 12s. each (also published in one volume, price, three guineas), 1857–61‖. Chapman & Hall, London.

The photographs are about whole-plate size, and appended to each is a description of the place or scene. There is no photographic information proper.

(76.) YEAR-BOOK OF FACTS IN SCIENCE AND ART. Exhibiting the most important discoveries and improvements of the past year, in mechanics and the useful arts, natural philosophy, electricity, chemistry, zoölogy, and botany, geology, etc. Edited by John Timbs; afterwards by C. W. Vincent and James Mason. 1839–85 ‖. 8vo. 180 No. 200 pp. London: Ward, Lock & Co., Salisbury square, E. C.

Brief notes on photography in each volume. These are extra volumes for the years of the great exhibitions, 1851 and 1862.

(77.) YEAR-BOOK OF THE SCIENTIFIC AND LEARNED SOCIETIES OF GREAT BRITAIN AND IRELAND. Giving an account of their origin, constitution and working. Compiled from official sources. With appendix comprising a list of the leading scientific societies throughout the world. 8vo. 1884–88 +. C. Griffin & Co., Exeter street, Strand. Price, 7s. 6d.

The first volume (for 1884) gives the history, organization and conditions of membership of each society. The later volumes furnish a chronicle of the work done during the year by each society, the titles of the papers read, etc., being given. The volume for 1887 contains 223 pp. The societies are divided into fourteen sections, of which "chemistry and photography" constitute section 3. Photography, however, only occupies a single page, the names of thirty-three societies with their presidents' names, and secretaries' names and addresses being given.

From the above list we see that a complete library of photographic works would include about eighty "English" periodicals; forty-two of these include the word "photography," or some equivalent for it, in their titles. Of these forty-two, the periodicals now in existence number eighteen, while twenty-four are extinct. No library in the world at present contains anything like a complete set of these eighty periodicals. We trust that the list here published may be of some service to those libraries, societies and individuals who are endeavoring, ere it be too late, to gather together these invaluable records of what has been done in the past.

AN OLD PHOTOGRAPHIC CLUB.

BY COLEMAN SELLERS, E. D., M. INST. C. E.

UPON receipt of one of the many periodicals devoted to photography, my attention was arrested by the length of the list of photographic societies in America advertising the date of their meetings. In one journal there were twenty-nine so advertised. There may be more that are not known to the public. Among these twenty-nine societies was the Photographic Society of Philadelphia, which some few years ago celebrated its twenty-fifth anniversary. That early association had its origin from among the members of a still older but not local society, from a club unknown to fame, and which had it continued until now, as formed, its existence would not have been noted in such a publication. The memory of that society remains green however in the minds of the survivors of the, not more than twenty-five, men who belonged to it.

The Quaker blood that flows in the veins of one of the survivors—blood inherited from ancestors who said thee and thou until the War of Independence made them soldiers, inclines him to say, that the Spirit moves him to bear his testimony as to the earnest efforts of these few men to help in the labor of clearing a pathway through the forest of ignorance that blocked the way on photography as in all new arts. The difficulties in the way of practicing photography in the beginning was so great, and the cost, too, so great, that few were inclined to follow it as a pastime; hence amateurs were few and widely scattered over the country. Now that the path has been made so easy that even children can play at picture-taking with success, it may be well said that it is wide enough for all, without jostling.

The story of the Amateur Photographic Exchange Club of 1861 cannot be told without dwelling on the work of one of its members, the one who founded it, and the one to whom its good work was mainly due. The late Mr. Henry T. Anthony, of the firm of E. & H. T. Anthony & Co., of 591 Broadway, New York, was its originator, aided by Messrs. F. F. Thompson and Charles Wager Hull, both of New York. Mr. Anthony was the President and Mr. Thompson Secretary and Correspondent. In 1861 Mr. Anthony's name did not appear in connection with his brother Edward, as it did later. Mr. Edward Anthony alone carried on the business of supplying all the requisites of photography, and he had been in that business for thirteen years before that time. When the firm, as now constituted, advertises that it has been in the business "for over forty years," it is well to consider what the art of picture-making by means of the camera was forty years ago. Photography, as we now understand the word, was not then in existence; but sun pictures were made on plates of copper silvered on one face and highly polished. The pictures that were then made, had to be held in a certain position in regard to the light to enable one to see the faint image on the shining plate. Rapid advance was made, however, and before the day of modern photography had dawned, daguerreotypes were made that were more attractive than the finest sun pictures by any other process. There were very few amateurs at that time. The goods sold by Mr. E. Anthony at 501 Broadway, New York, two doors below the St. Nicholas Hotel, then a leading hostelry in the metropolis, cannot now be bought, so entirely has the art and its requirements changed. The ambrotype took the place of the pictures on metal plates and the ambrotype has now gone, to make place for the ferrotype or "tin type." As an example of the state of the art so late as 1858, three years before the formation of the Amateur Photographic Exchange Club, it will be well to remark that the engineering firm of William Sellers & Co., in Philadelphia, desiring to illustrate their machinery by means of photography, engaged the services of portrait photographers for the purpose, with very poor results. Their chief engineer, despairing of getting the work done by the then professional operators, decided to learn the art himself, and with that end in view he wrote to dealers in New York, not to Mr. Anthony, it must be said, and stating his wants, he was, by them, furnished with a whole sized portrait lens and box with all the chemicals and apparatus needful to make pictures. He did not make any progress until he found a teacher who was at that time going from one ambrotype gallery to another teaching the operators how to make photographic pictures such as are now made. This Mr. Coner introduced the operator, his pupil, to Mr. Anthony. As for his method of teaching: to begin, he took one lens out of the portrait tube and had it mounted as a view lens, capable of covering a plate 14 x 18 perfectly. On plates of that size the writer was taught his first lessons in wet collodion photography. Thanks to the able teacher, photographing machinery was a success from the beginning.

It will be readily seen that Mr. Anthony's business must of necessity have put him in communication with most of the operators in the country, both professional and amateur. Mr. Henry T. Anthony, who was associated with his brother, had chances to learn the names of all interested persons, and he had been noted for his kindness to the amateurs who always found him willing to assist them in their work. With surprising tact and forethought he selected from among the correspondents of his brother's house and from among those who had written for the current literature on the subject, the names of the men most likely to work in harmony. In connection with the two gentlemen already named he formed the Amateur Photographic Exchange Club. Very many letters in the writer's possession show that Mr. E. Anthony was interested in his brother's work.

By means of this organization, men in his own city who were unknown to each other became intimate. In Philadelphia the same influence began friendships that ended only with the lives of the friends. The men so brought together in Philadelphia, very soon after founded their first photographic society, and the Photographic Society of Philadelphia, after having entered on its second quarter of a century is now as active, under the Presidency of Mr. Fredrick Graff, himself a member of the old club, as any other of the twenty-nine societies that advertise their meetings in the journals of the day. Boston gave good names; so did Washington, Baltimore, Cumberland, Md., Pittsburgh, Pa., and farther north, Troy supplied three professors: Rood, Himes and Emmerson, who now far apart, were then, working in harmony under one collegiate roof. It is very certain that Dr. Oliver Wendell Holmes after having contributed one paper on photography to the pages of the *Atlantic Monthly*, would not have written the "Doings of the Sunbeam" as he did, but for Anthony's club; for it was of the members of that club he wrote on subjects suggested by it. It was in that paper he claimed the formation of intimacies through photography as a new form of friendship. Leading up to this subject he has told how we can now construe the old fable of Apollo flaying Marsyas, as we can flay our friends and be flayed by them in turn, for he says can we not "slip off from the Dome of St. Peter's that other imponderable dome that fitted it so closely that it betrays every scratch on its original" or "we skim off a thin dry cuticle from the rapids of Niagara, and lay it on our unmoistened paper without breaking a bubble or losing a speck of its foam; steal a landscape from its lawful owners, and defy the charge of dishonesty" and even "skin the flints by the wayside and nobody accuses us of meanness." So, by means of the pictures stripped from off those who correspond with us, a friendship may begin, in the way he so touchingly details.

He says, a few pictures sent with the letters that open the correspondence between men who have never seen each other leads in time to matters of more interest. "The artist sends his own presentiment, not the stiff shape of a purchased *carte de visite*, but as seen in his study or parlor, surrounded by the domestic accidents which so add to the individuality of the student or the artist. You see him at his desk or table with his books and steroscopes about him; you notice the lamp by which he reads—the objects lying about; you guess his condition, whether married or single; you devine his tastes apart from that which he has in common with yourself. By and by, and as he warms towards you, he sends you the picture of what lies next to his heart—a lovely boy for instance, such as now laughs upon us in the delicious portrait on which we are now looking, or an old homestead, fragrant with all the roses of its dead summers, caught in one of nature's loving moments, with the sunshine gilding it like the light of his memory. And so these shadows have made him, with his outer and his inner life, a reality to you; and but for his voice which you have never heard, you know him better than hundreds who call him by name as they meet him year after year and reckon him among their familiar acquaintances." Do not these words, combined in the happy way the poet has of writing prose, apply to many individual cases and seem written to fit each case? One there is, who can never forget the impression the words made on him as he saw in his mind's eye the very pictures described in the order he has sent them, and which pictures had with the correspondence that accompanied them, been the means of securing to him the friendship of the autocrat of everybody's breakfast table.

"But for his voice which we have never heard" was true for many years after, even when both had laid aside their cameras, and were taking photographs when they found them to their liking by means of silver in its coined condition, or when kind friends, remembering their liking for pretty pictures, gave them the fruit of their skill. When they did meet it was in the parlor of the Tremont, House, in Boston. Having read every published line the poet had written we talked of his books among other things, and as we were close to the old graveyard where the poor fellow who was killed in the duel lies, the professor took us to the window and pointed out the grave-stone near to the big iron gate, the stone upon which the school-marm had thrown the rose taken from her bosom. Asking him where we could find the "long walk" in Common, a locality of importance in the story of the professor and his friend, we were told that by asking any police officer on the Commons for "Jinko tree" we would then from under that tree see the "long walk." These little incidents were not the first that had been given to us in relation to the fictitious persons in the poet's books. Many times had he written to us about them as of living and breathing people, many times so charmingly that we can scarce refrain from repeating his words, but then what history is so true as the speaking history of romance, or as Edmond About says in the closing chapter of his "Le Roi des Montagnes"—Chapter X in full: "Athènien, mon bel ami, les histoires les plus vraies ne sont pas celles qui sont arrivées," which I take it may be rendered, the truest histories are not those that tell of events that have happened.

(*To be continued.*)

THE THEORETICAL ASPECT OF ORTHO-CHROMATIC PHOTOGRAPHY.

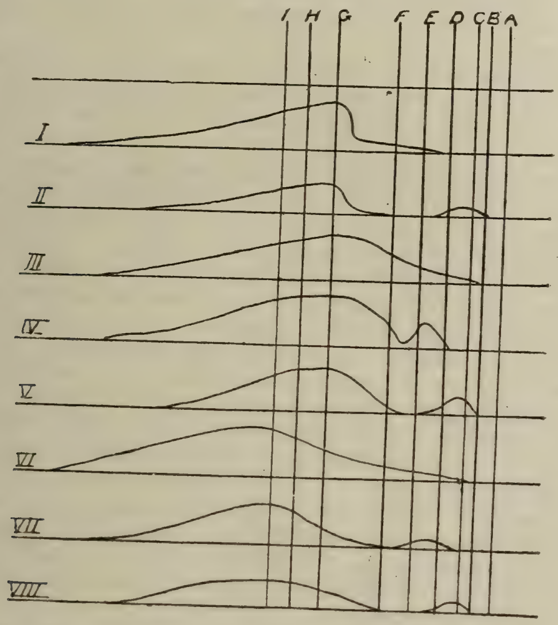
BY CAPTAIN W. DE W. ABNEY.

[Read before Camera Club Conference.]

(*Continud.*)

THE iodide of silver was next experimented with, and this was a very interesting salt, since its spectrum ended almost abruptly near G in the violet. In the printing experiments on this salt, an observation was made which is worthy of record from another point of view. Iodide of silver, when acted upon by light, does change color in a very faint degree, but the evidence of the liberation of iodine to form sub-iodide is very small. The plate before exposure had a dull green color, due to the color of the iodide and that of the dye. After printing, the color in the violet and ultra-violet was a buff, and in the orange the color of the normal iodide alone was visible. The dye in contact with the iodide acted upon by the violet rays, had absorbed the liberated iodine, and bleached it. After putting the plates in the fixing-bath, the impression made by the spectrum was shown as a white stripe where the violet end of the spectrum as far as G had acted, and a white band where the orange had acted. The ground was the blue, due to the color of the dye. This was the same in gelatine or collodion plates.

On developing a collodion plate with iodide as the sensitive salt, in which nitrate of silver was in very slight excess, the band in the orange made its appearance (see II in the figure), while, if the plate had been previously treated with a solution of bromide of potassium to convert all the minute particles of free silver into a bromide, no action was obtainable.



I. Spectrum on Silver Iodide. II. Spectrum on Silver Iodide and Erythrosin (with Excess of Silver). III. Spectrum on Silver Bromide. IV. Spectrum on Silver Bromide and Erythrosin. V. Spectrum on Silver Bromide and Cyanine. VI. Spectrum on Silver Chloride. VII. Spectrum on Silver Chloride and Erythrosin. VIII. Spectrum on Silver Chloride and Cyanine.

With a gelatine-iodide plate, to which the dye had been applied by simple soaking in a solution of water to which a very small quantity of alcohol had been added, no trace of a band in the orange could be found on development, though in printing it had bleached in that region. When the cyanine solution was made alkaline with ammonia, however, there was just a suspicion of a band. Now, the results of these experiments appear not to be in accord with the results of the chloride plates, but in reality they are confirmatory. The development of these plates was carried out by strong ferrous-oxalate solution, and before full density of image could be obtained a couple of hours had to elapse, the developing action not commencing often till after five minutes. This showed that the iodide is very difficult of reduction, as, indeed, is well known, and seems to point out that the reduced dye (we know it was reduced as it bleached under prolonged printing) was not strong enough in its developing power to form the nucleus for development. In the case of the ammoniacal solution of cyanine, the development was more rapid, and besides this, it is quite possible—nay, more probable—that a very minute developing action had already commenced where the dye had been acted upon, owing to the presence of the alkali.

The silver bromide was likewise put to the same ordeal as the others. The printed spectrum was almost precisely the same as would be obtained by compounding the spectrum obtained on bromide of silver, and that on cyanine blue.

This applies to gelatine or collodion plates. In every case on development, the orange band made its appearance. The reasoning applied to the chloride and iodide applies likewise to this. It should be remarked that when soluble bromide was present in some notable quantity, the action of the cyanine was almost nil, which points to the fact that the silver bromide was less easily reduced by the altered dye in its presence than when it was absent. The retarding action of the soluble bromide, with the dye is analogous to its retarding action with the ordinary developer.

This applies to the erythrosin dye as well, and so this fact will not be repeated.

In these experiments carried out with cyanine and chloride, bromide, and iodide, we have the bromide more acted upon in the green than the chloride, and very much more the iodide, which agrees with the order of reduction which was given above.

Perhaps here I had better call attention to the very important item in these experiments which I have described. It will be seen that in order to render the action of cyanine visible, it is not necessary to dye the film of a gelatine plate. It is only necessary to have two films in contact, one containing dye alone, and the other the sensitive salt, and to expose through the dyed film. This is what might be expected, however, as development commences at the surface. I may say that by placing a dried film of dyed collodion in contact with a gelatine film under great pressure the same action is manifest, though in a minor degree. This is a somewhat remarkable result, and applies not only to cyanine but to erythrosin, and all the dyes I have tried which give sensitiveness to a plate; and to this may be added substances which increase the general sensitiveness of a plate. Thus collodion or resinous varnishes containing dyes, and even an alcoholic solution of the dye itself, will give the necessary ortho-chromatic properties, and is a very simple way of proceeding. Plates thus need not be prepared in advance, but are ready for immediate use on application of the varnish or dye. The dyed coating may be rendered alkaline by passing ammonia through the alcoholic solvent; or the film may first be rinsed with ammonia in water and dried, or it may be flooded with an alcoholic solution of ammonia, and then the second film applied. The action is then more rapid. This method of applying coloring matters is very advantageous, since it enables those to be used, such as chlorophyll, which cannot be employed in an aqueous solution, but which can well be employed in an alcoholic solution.

We now come to erythrosin,* and this is a different type of dye, in that it will combine with silver nitrate, and probably with silver bromide. When a plate is dyed with simple erythrosin, the resulting body may be a lake, together with a compound of silver, be it held in situ in gelatine or in collodion. A film may be more or less dyed, and when dried and again wetted, no ordinary amount of soaking in water or in alcohol will eliminate all the dye, and, indeed, very little of it. Remove the salt of silver in the fixing-bath, and the whole of the color may be speedily washed out, leaving no trace behind it. The inorganic body having been removed, there is nothing to hold the dye. Eder proved that, however thorough the washing of dyed bromide emulsion might be after separating it from the gelatine, still a certain quantity of dye always remained behind, and sufficient to give the yellow sensitiveness in the case of the dye which he was examining. It is possible that in this irremovable color we have the quantity of dye which combines with the silver salt. (That it does not combine with the gelatine is shown by the fact that if a dyed film containing a solid silver salt be fixed, the whole of the dye may be washed out).

If the whole of the dye be present, as in a lake, its molecular contact with the silver salt is sufficient to account for the ortho-chromatic action, as in the case of cyanine.

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* It should here be stated that the series of experiments was intended to be made with eosine, but owing to an initial mistake erythrosin was first employed, and so the rest of the experiments were made with it. For some purpose eosine when applied to the bromide would have been more instructive, since it is a bromide of fluorescin which might have formed a true double compound with the silver bromide, but it is by no means improbable that erythrosin does the same.

Placing a bromide film stained with erythrosin in the spectrum, and printing on it, we have a curious result. When a gelatine plate is used, the spectrum prints in the violet-blue, as usual. But in the green, in addition, there is an increased darkening where the absorption bands of erythrosin are extant.

BEHAVIOR IN THE SPECTRUM OF SILVER SALTS TREATED WITH ERYTHROSIN.

Silver Salts.	Vehicle.	Action shown on development.								Printing action.	
		Films Stained.		Coated with dyed collodion.		Coated with dyed varnish.		Coated with Collodion and after exposure treated with H_2SO_3.			
		Ordinary effect of spectrum	Green bands.	Ordinary effect of spectrum	Green bands.	Ordinary effect of spectrum.	Green bands.	Ordinary effect of spectrum	Green bands.		
Chloride......	Collodion.	Normal ..	Feeble, with excess of chloride.	......	......	......	......	......	......	Darkens..	
			With excess of Ag., strong.....	......	......	......	......	......	......	......	Slightly bleached.
"	Gelatine..	Normal ..	Strong	Normal ..	Strong ...	Normal ..	Strong ...	Normal ..	Faint.....	"	Feeble, with ammonia strong.
Bromide......	Collodion.	Normal ..	With excess of chloride feeble.	......	......	......	......	......	Faint.....	"	Moderately strong.
			With excess of Ag., strong.....								
"	Gelatine..	Normal ..	Strong	Normal ..	Strong ...	Normal ..	Strong ...	Normal ..	Faint.....	"	Strong.
Iodide........	Collodion.	Normal ..	Nil	......	......	......	......	......	......	Bleached..	Bleached.
"	Gelatine..	Normal ..	Nil..........................	Normal ..	Nil.......	......	......	......	......	Bleached..	Bleached.

It is evident from this that we have here an increased action on the silver salt by its contact with the dye. It must be recollected that the bromide by itself will discolor in this part, and is therefore sensitive to development in this region, and that it is only an increased action that is evinced. The dye itself may be affected, but this would not account alone for the increased darkening action. We must, therefore, look for a secondary action. Such an actionmay be found in what has already been fully explained, the developing action of the dye.

When dyed plates were developed we got the image of the spectrum as has so often been described before. If a gelatine plate was coated with collodion stained with erythrosin, precisely the same action was manifest. When the collodion film was removed after exposure the action was still visible and indeed marked. Even when the film was treated with sulphurous acid the band in the green was still persistent.

With a chloride plate (collodion or gelatine), when the plate is dyed we have a darkening action in the blue and a bleaching or rather yellowing action in the green, where the erythrosin absorption bands are found. This refers to the printing out action. The chloride in collodion is not sensitive to this part of the spectrum. When the dyed chloride plate is exposed in the spectrum an image is developed in both the violet and the green; in the case of the collodio-chloride, and in the gelatino-chloride the blue and violet are acted upon and also the band in the green.

Coating a gelatino-chloride plate with collodion dyed with erythrosin we get the same action exactly, but if it be removed before development, we get a slightly less intense band in the green.

If, however, the plate be coated with collodion and the dye altered by means of sulphurous acid in alcohol, no action in the green is seen at all, although a very prolonged exposure was first given to this part of the spectrum with white light, which had been first absorbed by passage through a cell containing chromate of potash. The image in the violet developed out strongly, as usual, showing that the sulphurous acid had not destroyed the silver image.

With the iodide we have a very curious action. There is an apparent yellowing of the dye in the green band, which may be the commencement of bleaching, or the reduction to sub-iodide of the salt beneath the former is most probable, if the image which is developed be taken into account. On a gelatine plate the spectrum does pretty much the same.

On developing, however, it appears that in the green there is not the faintest trace of a band on a gelatino-iodide plate. There is a slight one, however, on a collodion plate in which the silver nitrate is slightly in excess. This difference in behavior is due to the fact that in the latter the silver nitrate has combined with the dye. The same reason for the non-appearance of the band with the iodide given when cyanine was the dye used seems to hold in this case. When the dye is used with ammonia, however, we do get a slight indication of a band. This is also probably due to the cause pointed out when dealing with the action of cyanine on silver iodide.

These experiments show that the order of action is the (1) bromide, (2) chloride, (3) iodide, which is the same as that with cyanine, and supports—may not I say prove—the theory.

A few other experiments which I undertook I will just indicate. It was my wish to see if the gelatine or collodion had anything to do with the results. To test for this, I used polished silver plates, such as are used for the daguerreotype-plates. One I immersed in bromine water, and after the surface had been well washed and dried, treated it with a solution of erythrosin. The result was that on development with ferrous oxalate, the band in green appeared together with the darkening in the blue and violet; in fact, it behaved like a collodion plate. With a similar plate treated with cyanine, there was the band in the orange visible, but when the cyanine was first removed, the band was not observable. Similar experiments were carried out with chlorinized plates with like results. Another experiment suggested itself—viz., to treat a daguerreotype-plate iodized in the usual way with a dye, and then after removing the dye to develop with mercury vapor. The following are the results. The plate was exposed for twenty minutes to the spectrum formed by white light which had passed through a cell containing chromate of potash, and then one minute to the whole of the spectrum. This gave no band whatever in the green. A plate treated with bromine and similarly developed, gave indications of a band in the green.

Other experiments were carried out also with a mixture of cyanine and erythrosin, and cyanine and eosine.*

I think, then, the experiments tend to prove that the nucleus theory is not an impossible or improbable one. For my own part, I may say that I am perfectly satisfied that it is a very safe explanation of the whole of the phenomena met with in the action of dyes. The theory of optical sensitizers, as I understand it, is different, and it is one from which I have always, and quite recently, expressed my dissent. The term is misleading, I would suggest. That there is a secondary action on the silver compound by the reduced dye is beyond dispute, but this is not caused by light, but by the reducing power of the altered dye; in fact, this last will do its work equally effectively if altered by chemical means.

Whatever may be the opinion of the theory, one thing this set of experiments has led to—viz., the method of making a plate sensitive to rays to which it was before insensitive (or, at all events, not very sensitive) by means of a second film of dyed material. This is valuable in that the color sensitizing may be effected in a very few minutes before the plate is required for use. I have developed plates by the alkaline method, and by ferrous oxalate when thus treated, and I have got good results with both. Very thin varnish is perhaps the easiest method of applying the dye to the surface, as it is easily removed. This method requires working at a little to give the best results in development, and this I leave to others.

DISCUSSION.

Mr. Bedford said he had worked in ortho-chromatic photography as an experimentalist, but had not formed any decided theory as to the action of the coal-tar dyes. He though there was a great deal of force in the facts Captain Abney had put forward. He must admit that he had never been quite able to grasp Dr. Vogel's theory of optical sensitizers, for it seemed that this theory required also a chemical sensitizer, and it was this that really did the work. From his own experiments, he was certain that a true chemical combination was formed, and some salts gave much greater effects than others. He did not quite appreciate how the dye, if it developed, could do so when it was surrounded with gum, and could only act simply by contact.

Mr. Lyonel Clark hoped that the great simplicity and ease of Captain Abney's method of ortho-chromatizing plates would induce more people to take this branch of photography up. Hitherto, there had been some slight trouble in dying plates, but with the use of collodion this would now be obviated.

Mr. Wollaston asked if more light could be used in developing plates so prepared.

Captain Maycock asked if dyes having ortho-chromatic effect were always fugitive; and, if not, how would Captain Abney then explain his theory.

Mr. Cunningham asked some very pertinent questions as to whether the dyes Captain Abney used had been prepared in the dark, and whether, if not, they could have the same effect.

Dr. Lindsay Johnson had found that these dyes deteriorated by keeping. He had bought commercial ortho-chromatic plates, and found that after a month they had lost their qualities. He would like to know whether Captain Abney had tried placing his dyed film behind the sensitive film in the way the "sehpurpur" lies behind the retina in the human eye.

The Chairman (Mr. Wood) in reviewing Captain Abney's paper asked him whether he had practically tried it for ordinary work.

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* I may point out that I am under the impression I was some time the first to point out the benefits of this mixture. On August 5, 1884, I wrote to the *Photographic News:* "An emulsion, whether it be collodion or gelatine, can be rendered sensitive to red, yellow, and green, by mixing it with a trace of cyanine and a rather stronger proportion of eosine." I quote this, as this mixture has been rediscovered in Germany after that date. Then I went on to describe how the plates should be dyed. Further, in the same communication I showed how to add eosine of silver to a gelatine emulsion. I make this note here, as the mixture has been subsequently recommended.

Captain Abney, in reply, said that, since the development begins at the top surface of a plate and works downwards, as he had shown in previous papers, the dye on the top served as a nucleus from which the development began, and was, therefore, nearly as good as when the dye was spread throughout the film.

In reply to Mr. Wollaston, the light to be used was just the same as for ordinary ortho-chromatized plates.

With regard to Captain Maycock's question, as a matter of fact, every dye having any ortho-chromatic properties that he had ever met with was fugitive. In answer to Dr. Johnson, the dyes undoubtedly do lose their power, and the plates fog. He had exposed through the glass; the result was the same—but, of course, very sensibly weaker.

Captain Abney then resumed his seat, and called on Mr. Clark to read his paper.

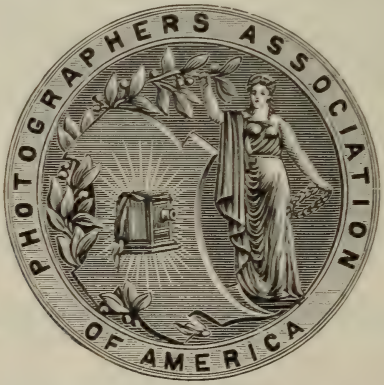
OUR ILLUSTRATION.

THE photo-gravure with which we illustrate this issue of the BULLETIN is one of those charming little views to be found in many of the old German towns. Pegnitz is an old walled town of Bavaria through which the little stream that forms our illustration runs. It is only about sixty miles long but abounds in many pretty views similar to the one we give.

The little town is about thirteen miles from Beiruth and near the source of the river. The photo-gravure is by Gebbie and Husson, of Philadelphia, and the work speaks for itself.

1888 MEDALS FOR MINNEAPOLIS CONVENTION.

WE give herewith a cut of the design for the new medals to be made for the prize winners at the Minneapolis Convention of the Photographers' Association of America. Our readers should now be hard at work with their exhibits for the Exhibition and competition. As the years roll bye these yearly contests in our art are becoming more and more interesting and worthy of earnest consideration by every photographer.



PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

To the Editors of the BULLETIN:

I was very happy to see your editorial in the BULLETIN of April 28th on the proposed Mutual Benefit feature of the P. A. of A. Your suggestions were excellent and might have gone farther, as, for instance, having a central office, to be managed by the Secretary, who would have all the work to do, and who would, of course, have to "be paid for his services." Let us go into the matter in a business-like way, if we do attempt it, and I have no doubt it will prove a success to the association by placing it on a firm basis, and increasing its membership, and to the individual members or their families rather, in case of death. And now let me urge the fraternity to meet with us at Minneapolis. We will give them "a feast of reason and a flow of soul" as well as a view of what I believe will be as fine an exhibition of photographs as has ever been shown at any of our conventions.

We have papers promised on nearly all the following subjects: "Art in Photography," "Science in Photography," "The Skylight and Operating Room," "Printing," "The Dark Room," "Retouching," "Mechanism of Photography," "The Business Side of Photography," "Enlargements," etc. Come, see, hear and discuss!

E. DECKER.

MINNEAPOLIS CONVENTION.

IN order to make the coming gathering of photographers particularly interesting and instructive to the users of Anthony's Reliable Bromide Paper, we have decided to offer the following cash prizes:

For the best collection of plain enlargements	$50 00
" " Crayons, worked enlargements..	50 00
" " Pastels, " " ..	25 00
" " Ink or Water colored " ..	25 00

No collection of plain enlargements need exceed half a dozen.

Worked prints may be limited to two, or may be increased in number as the exhibitor may desire.

What we want is *quality not quantity.*

Exhibitors should notify us one month before the date of Convention of their intention to compete, naming the class or classes they will exhibit in, and giving a private mark by which their exhibit will be recognized after the awards by the judges, who will be members of the association. On such notification we will return a circular of directions as to shipment, etc.

E. & H. T. ANTHONY & CO.

NEW YORK, May 12, 1888.

AIR BRUSH PRIZES.

THE Air Brush Manufacturing Company will offer the following prizes at the Convention of the Photographers' Association of America, to be held in Minneapolis in July, 1888:

One complete Air Brush will be given for the best portrait in black and white, finished with the Air Brush.

One complete Air Brush will be given for the best portrait in water colors, finished with the Air Brush.

All work competing for these prizes shall be over prints.

The awards shall be made during the Convention by three judges, who shall be members of the Photographers' Association of America, and who shall be chosen at the time of the Convention.

A NEW SUMMER ANNUAL OF PHOTOGRAPHY.

"THE INTERNATIONAL ANNUAL OF 'ANTHONY'S PHOTOGRAPHIC BULLETIN.'"

The publishers of "Anthony's Photographic Bulletin" have much pleasure in announcing that they intend to issue in July, 1888, a new Photographic annual, which will contain important contributions from the leading photographers of the Old and New Worlds.

In the new annual it is hoped that workers in the two hemispheres will contribute in fairly equal proportions accounts of their apparatus, methods, modes of working, and discoveries. This "international" character of the book will, it is believed, be specially acceptable.

The "International Annual" will be published at midsummer, just when photographers are most in need of help and of the latest information. All its features have been carefully considered. It will contain a number of illustrations of the highest class—English and American; a careful selection of useful tables and formulæ; numerous editorial articles for "advanced workers"; the "First Principles of Photography" for beginners; lists of photographic societies and their officers; a large number of original articles specially written for this book, and several new features which need not yet be specified.

Articles, or promises of articles, have been received from Sir D. Salomons, Bart.; Sir Howard Grubb, F.R.S.; Professor Piazzi Smyth (Astronomer Royal for Scotland); Capt. W. de W. Abney, G. M. Whipple, B.Sc. (Superintendent Kew Observatory); Chapman Jones, Andrew Pringle, Dr. P. H. Emerson, B. J. Sayce, H. P. Robinson, S. G. B. Wollaston, W. Adcock, George Bankart, C. H. Bothamley, T. C. Hepworth (Editor, *The Camera*); T. Bolas (*Photo News*); R. Keene, The Hon. J. G. P. Vereker, J. A. Forrest, Clement J. Leaper, Henry Sturmey *The Cyclist*); Greenwood Pim (of Dublin); George Mason (Glasgow); Professor Steggall (Dundee University); T. R. Dallmeyer, J. Traill Taylor (Editor, *British Journal of Photography*), and about eighty of the other leading Photographers of the British Isles. In the United States—John Bartlett, Philadelphia; Henry J. Newton, New York; F. C. Beach, New York; Prof. D. L. Elmendorf, New York; Prof. O. N. Rood, Columbia College; Prof. C. F. Chandler, Columbia College; Prof. Coleman Sellers, Stevens Institute; Fred. E. Ives, Philadelphia; Dr. Piffard, New York; Dr. Maurice N. Miller, Bellevue Hospital, New York; Col. A. C. M. Pennington, Fortress Monroe, Va.; Lieut. H. A. Reed, U. S. Military Academy, West Point; Serg't C. E. Von Sothen, U. S. Experiment Station, Whitestone, L. I.; Prof. P. T. Austin, Rutgers College; Dr. L. H. Laudy, Columbia College; Prof. J. K. Rees, Columbia College; Dr. P. H. Dudley, New York; Prof. Spencer B. Newbury, Cornell University. Dr. H. W. Vogel, Berlin; Prof. J. M. Eder, Vienna; Victor Schumann, Leipzig; Prof. J. Husnik, Prague; Leon Vidal, France, and many others.

This annual is to fill a place unoccupied by any existing similar publication. The co-operation of one of the ablest photographic workers in Europe has been secured to edit the contributions from the transatlantic contributors, W. Jerome Harrison, F. G. S. a name "familiar in our mouths as household words," from his noted contributions to the literature of our science. On this side of the Atlantic the Annual will be in the hands of Arthur H. Elliott, Ph.D., F.C.S., whose well-known editorial work on the Bulletin is a sufficient guarantee for a good feast of photographic lore from American contributors. With such a combination of able editors, tried and not found wanting, the success of the enterprise is well assured, and the Annual will be as popular, both here and in Europe, as any similar publication now issued. It will embrace a somewhat different field of interest in photography from any other work; will be issued at a different time, and there is no doubt will command the attention of every earnest photographic worker, both professional and amateur. Neither time nor money will be spared to make the International Annual worthy of the able editors and a credit to the publishers. The circulation will be 10,000. Every reader of the BULLETIN should subscribe for the new Annual as it will be indispensable for the studio, the dark room and the field. It will be one of those books that are placed in a convenient situation because they are often wanted.

E. & H. T. ANTHONY & Co.

CENTRIFUGAL FORCE APPLIED TO EMULSION MAKING.

BY ANDREW PRINGLE.

AFTER an emulsion is formed by double decomposition in gelatine, the bye-products, consisting chiefly of nitrates, have to be eliminated. Further, after the process of digestion and boiling resorted to to increase the sensitiveness of the silver haloid, the gelatine used in the cooking process is in a state of partial or complete decomposition, and has not only in most cases lost its power of setting, but has in many cases an abnormal tendency to form mysterious and dangerous combinations with some of the salts present, especially under treatment with alkalis.

Some processes of washing eliminate more or less completely the nitrates, some eliminate the gelatine, some successfully eliminate both nitrates and gelatine. The ordinary washing process eliminates the nitrates practically, and, if carefully performed, may be said to eliminate them completely. But the decomposed gelatine, or the gelatine just on the verge of decomposition, being probably more or less bound up in the mass of gelatine undergoing washing, is presumably not removed by ordinary washing, and, what is more serious, the bulk of healthy gelatine takes up an indefinite quantity of water in the washing, the quantity depending on such matters as the nature of the gelatine, the state into which it is divided, and the temperature of the washing water. Moreover, the process of partially drying the jelly after washing by squeezing it or allowing to drip, involves an amount of uncertainty not less than that involved in the actual washing.

The precipitation by alcohol process has also its defects. The coagulated gelatine is with great difficulty or not at all permeated by water, and it probably binds up a considerable quantity of the nitrates in its substance. At all events, a precipitated emulsion requires to be divided into very minute particles—an awkward and unpleasant operation at the best—and further needs very prolonged washing to free it from nitrates.

Other methods depending on precipitation are, in my experience, either unaccountably uncertain or rascally dangerous to the emulsion. Adding ammonia to the cooked emulsion sometimes sends down the bromide, sometimes it does not, and sometimes it is very difficult to tell in the dark room whether the silver bromide is down or not. Acids, such as acetic, send down the silver bromide by destroying the viscosity of the gelatine, and by this method I have washed many an emulsion, but I have invariably found that the emulsion has been slowed or otherwise damaged by this treatment.

The method of eliminating bye-products and decomposed gelatine which I propose to discuss is that of centrifugal separation—first, I believe, suggested by M. Plener; afterwards advocated by Mr. A. L. Henderson. The process and the machinery are both open to the public.

(*To be continued.*)

ANTHONY'S
Photographic Bulletin.

EDITED BY
Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.,
and a corps of practical assistants.

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Advertisements should reach us not later than the Saturday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, six, twelve or twenty-four issues.

E. & H. T. ANTHONY & CO., Publishers.

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

A STATED meeting of the society was held Wednesday evening, May 2, 1888, with the *President*, Mr. FREDERIC GRAFF, in the chair.

Attention was called by the President to an exhibition of the work of members, which it was proposed to hold from May 23d to June 2d, inclusive. From the pictures exhibited, and entered for such competition, the presentation pictures for 1888 would be selected.

The committee on membership reported the election of the following active members: William T. Elliott, Theodore N. Ely, William J. Walton, George W. Ennis, William S. Vaux, Jr., H. Parker Rolfe and Whitney Bosbyshell.

At the suggestion of the society's representative in the American Lantern Slide Interchange, the action in regard to the report of the recent conference of delegates was, on motion of Mr. Burroughs, reconsidered.

Mr. BURROUGHS then moved that in order to facilitate the organization of the Interchange the report, as originally presented, be ratified by this society.

The *President* read a note from Mr. F. de B. Richards, presenting a number of books on photography to the society, which were acknowledged with thanks.

Mr. FREDERICK E. IVES made the following communication:

"At a recent meeting of the Franklin Institute, I announced the successful application of chlorophyl to gelatine bromide dry plates in the following manner: Rapid commercial plates were flowed with suitable alcoholic solution of chlorophyl, then dried, then soaked in water. The plates prepared in this manner, and then dried, are more color-sensitive than commercial ortho-chromatic plates, besides having relatively sufficient red sensitiveness; but owing to excessive blue-sensitiveness should be used with a deep orange color screen. The successful application of chlorophyl in this manner suggested a trial of other color-sensitizers in the same way. The result was a great surprise. Rapid commercial gelatine bromide plates flowed with alcoholic solution of erythrosin, then dried, then washed or soaked in water, proved to be ten or fifteen times more color-sensitive than commercial ortho-chromatic plates. They work clear and bright, and quick enough for portrait work with the yellow screen."

Mr. ROSENGARTEN showed some samples of chemicals which had recently come into notice for photographic purposes. They consisted of meta-sulphite of potash, bisulphite of potash, hydroquinone, and muriate of hydroxylamine.

Dr. MITCHELL stated that he had obtained excellent results with hydroxylamine in combination with pyrogallic acid, as a developer for lantern slides. The developer kept perfectly clear during development of 12 slides, and then was but slightly tinged with yellow. The color of slides was a rich purplish black with clear shadows. The formula was one recommended recently by Mr. Cassebaum.

Mr. BARTLETT had also employed with the best results the formula of Mr. Cassebaum, in using hydroxylamine and pyro for window transparencies, and could recommend it for giving fine tones and good printing qualities to negatives. He had used the same solution upon a number of plates without observing any muddiness.

He had hoped it would be advantageous in developing bromide prints, but was not fortunate in his results, the paper becoming stained and clouded in the whites. He deprecated the use of hydroxylamine alone in connection with alkalies as a developer, and spoke of the injury it caused by reticulating the film.

Mr. ROSENGARTEN moved that a committee be appointed to experiment with the new developers coming into notice, and to give a demonstration before the society, at such time as may be convenient. Dr. Mitchell and Mr. Bartlett, with Mr. Cassebaum, by invitation, were appointed a committee for this purpose.

Mr. GEORGE VAUX asked if the salts of quinine had ever been successfully used in development.

Mr. TATHAM stated that a large proportion of acid was necessary to dissolve the quinine, and the addition of the alkali made the mixture turbid.

Mr. BARTLETT called attention to his experience in intensifying gelatine plates with bichloride of mercury, followed by ammonia, which he thought would be of practical value, on account of the capability it afforded of controlling the degree of strength. He said that with the method usually pursued, one was obliged to take whatever degree of intensity the mercury would give, and that frequently the negative was made entirely too dense for printing purposes, and gave harsh results with chalky high lights.

The method he follows is to first immerse the flat over-timed negative in a bath composed of

Per chloride of iron (cryst.)..	120 grains.
Citric acid................	240 "
Water....................	32 ounces.

the object of which is to thoroughly clear up the shadows and to remove any slight trace of fog which, if allowed to remain, would increase only with the intensification, and injure the brilliancy of its result.

The negative is allowed to remain only a few minutes in this bath, which is, in reality, a powerful reducer, and would, if the action upon the plate were long continued, obliterate the image. On removal, the negative is washed under a tap, then transferred to the bichloride of mercury solution, which may be of any strength from 10 per cent. up to saturation, a little chloride of ammonium being added if necessary to facilitate solution. After the film is well bleached, it is again washed and placed in ammonia and water (1 dram to 2 or 3 ounces).

The negative should be allowed to gain all the strength possible, no matter how dense, even to the appearance of cast iron, inasmuch as the means of reduction to any desired degree of strength are completely under control.

All that is necessary is to re-immerse the negative in the solution of perchloride of iron and citric acid, as given above, and to watch until the gradations of light and shade are properly represented upon the plate.

The resultant negative is harmonious in tone and of excellent printing qualities, and also keeps well. Mr. Bartlett thought that the preliminary bath of iron tends to destroy the last traces of hypo in the film and thus prevents staining when the mercury is applied. He believed that the philosophy of intensification consists in first clearing up the film before application of the strengthener, and that whatever method of intensification is employed, the perchloride of iron solution will be found a most excellent clearer, he having first recommended it more than a year ago in connection with Mr. Cassebaum's gallic acid and silver intensifier.

In regard to permanence of intensified plates Mr. BELL claimed that mercury followed with ammonia, mercury followed with cyanide of silver, mercury followed with bromide of potassium or sulphite af sodium, are permanent; but plates strengthened with iodide of mercury in any form are fugitive, and it should be used only when the negative is not to be preserved and great contrast is required.

Mr. TRUSCOTT (a visitor) said his experience was opposed to this, as he had no trouble with iodide of mercury on that score, and although the image so intensified was liable to turn yellow (especially if the action of the mercury was very complete), even during the washing, it was quickly restored and rendered permanent by a momentary dip in the fixing bath, or a more prolonged immersion in a very dilute solution of hypo. He stated that his experience with mercury and ammonia was more especially in connection with the toning of collodion transfers and opals, in which case, although it gave very fine brilliant tones, all the beauty faded out during drying, especially if hastened by heat. One advantage of iodide of mercury was its being a one-solution method, allowing every facility for watching the progress of the process. He thought that more permanency was to be expected by whitening the image with mercury chloride, and after washing, blackening with dilute hypo or sulphite of soda, than from any other form of mercurial intensification.

Mr. BARTLETT substantiated Mr. Bell's remarks that the method advocated by Mr. Truscott would cause the entire destruction of the plate. He had some time ago made experi ments with a view of obtaining a warm brown tone upon gelatine lantern slides, and had employed for the purpose as mercury a toner before fixing, followed by a dip in the hypo solution. The image bleached out by the mercury was reproduced by the mercury in a beautiful brown tone, quite to his taste, but, unfortunately, it was very fugitive, the whole slide fading out in a day or two when exposed to the diffused daylight.

Mr. Browne stated that he had doubts as to the permanency of gelatine plates after being strengthened with mercury bichloride, mentioning many cases where positives and negatives had been seriously injured or destroyed by using this chemical with after application of ammonia. Even a final treatment with hypo had not, in his hands, been satisfactory.

The results of intensifying with mercury, and after treatment with silver cyanide, yielded some lasting negatives, but the action of these chemicals were so vigorous that the high lights were inclined to be too strong.

Mr. Browne mentioned that in looking over a number of gelatine positives made several years ago (all of them having been treated with mercury and ammonia), the pictures had almost faded from view. Thinking that possibly a second application of the same chemical might repair the damage, the process was repeated and proved successful; showing that positives or negatives which appear to be utterly worthless can be rescued, at least for the purpose of reproduction. Of course every photographer of experience is aware that it is useless to apply mercury bichloride to a gelatine plate unless it has been thoroughly washed to remove the hyposulphite of soda. In the case of the fading gelatine positives mentioned, Mr. Browne was not prepared to say that all the hypo had been removed. But in other experiments especial care had been taken to remove that objectionable chemical. A few trials seemed to point to platinum bichloride as an intensifying agent for gelatine plates.

The discussion turning to the subject of quick *vs.* slow plates, Dr. Mitchell favored the former for landscape work, particularly for foliage in shaded places, where long exposure would be necessary with slow plates.

Mr. Bartlett thought that the objection of Dr. Mitchell to the use of slow plates for landscape work because of the motion of the foliage was rather more applicable to very rapid plates. He thought that the slow plate, by reason of its diminished sensitiveness, was less liable to translate upon the film any slight motion of the foliage than a rapid one; that a very rapid plate would register impressions which would not be perceptible upon a slow plate.

In this connection Mr. Bell remarked that Dr. Mitchell's objection would hold good only when a shutter was used; if it were time exposure the movement would be registered upon the plate more than if a slow plate was used, as then the foliage could be watched and the lens covered with a cap, and exposure begun again when the foliage becomes quiet. "There is not in the market a slow enough plate for this mode of working on a windy day. A plate requiring thirty seconds to one minute exposure, would be what I recommend, collodio bromide."

Dr. C. L. Mitchell remarked that in comparing the merits of slow and rapid plates he was inclined to give preference to a quick plate, particularly in photographing woodland scenery. On the latter a long exposure was nearly always required; in fact, a plate could hardly be over-exposed, and if a slow plate was used it was difficult to avoid the movement of the foliage, without repeatedly capping and uncapping the lens, and thus running more or less risk of blurring the outlines of the picture. With a rapid plate, on the other hand, a much shorter exposure was required, and the occasional interval of quiet during a light summer breeze generally afforded sufficient time to obtain an excellent negative.

Dr. Mitchell remarked that much of the adverse criticism which rapid plates received was due to a lack of proper handling of the plate during the process of development. The fault was not so much in exposure, for it was perfectly possible to take a plate which had been very much over-exposed, and yet obtain a good negative from it. The amateur, in development, was generally guided too much by the printed sheet of instructions accompanying each box of plates—take so much No. 1 and so much No. 2, mix them and flow over the plate—and proceeded to develop all his exposures according to this iron-clad formula. The result was that many of his exposures were ruined, whereas, if the development had been carefully studied, a much smaller number of failures would have resulted. In development it was well to bear in mind the cardinal principles that pyro gave density, the alkali was the accelerator and hastened action and also brought out detail, and bromide retarded action and kept the shadows clear. Then each plate should be made a separate study of, and its development conducted according to these rules. If over-exposed, the usual quantity of pyro should be used, but very little alkali to commence with, and if the action did not proceed at once, then adding cautiously more alkali, a few drops at a time, until the image began to show itself. In commencing development with a new developer, unless the plate was known to be under-exposed, it was well to add a few drops of bromide. For subsequent plates this was not necessary, as the chemical action of the developing liquid on the plate resulted in the absorption of a certain amount of bromide in the developer from the plate. For this reason with each subsequent plate the action of the developer became less rapid. Dr. M. was in the habit of saving the developer after use and keeping it in an amber glass bottle with a rubber stopper. In commencing development with a fresh developer, it was his usual custom to add to this about one-third of its bulk of the old reserved developer. The result being a slowing of the development and a much more soft and even action of the liquid upon the plate.

Mr. BARTLETT thought that development was a fine art, requiring constant practice, like music, to keep one's self in working order. He believed it required an exercise of judgment, and that the mode of development should be in accordance with the character of the subject. In his pictures of still life, where he desired harmony in preference to brilliancy and great contrast, he slightly overtimed his subject to insure softness; then in the development, in spite of the fact of the plate being overtimed, employed an excess of alkali over the pyro, with a large proportion of water; for instance:

Stock solution of pyro...	1 dram.
Stock solu. of alkali.	1½ to 2 drams.
Water..............	8 or 10 ounces.

The plate he allowed to come up slowly until the detail finally appeared, and to then remain a reasonable time in the developer if he found it gradually acquiring strength, but if it showed tardiness he added pyro to strengthen. He employed the same method with success in developing magnesium flash-light pictures, in which it is necessary to keep down contrasts.

Mr. CARBUTT volunteered a few remarks on developing instantaneous exposures. He said during the past week "he had been trying three modes of developing instantaneous exposures, using the same alkaline solution, but in varying degrees of strength. First, by using it the full strength, as giving in formula accompanying the Eclipse plates. Second, by following directions given in that formula for instantaneous exposures, and when detail was fully out, but yet lacking density, rinsing off, and placing in the hydrochinone developer published for use in making transparencies, leaving it in this until full density was obtained. Third, by taking 2 ounces of the dilute soda solution, 2 drams of No. 1, 6 drops of the bromide solution, and 8 ounces of water; the exposed plate immersed in it, covered over, and occasionally agitated. It took one hour to fully develop the image, and the result was very satisfactory, the graduations being very finely rendered. The first method, using the concentrated soda solution on the plate, and afterwards adding to each ounce 1 dram of No. 1, brings out the image in about the same time as a fully exposed plate, but the deposit is very course and lacks the delicacy of the slower method.

For instantaneous exposures at the seashore, Mr. Carbutt believed most photographers used too rapid a plate, and he further remarked that ortho-chromatic plates would give better results for such work than plain bromide plates; also in developing time exposures, better results will be secured when using a fairly rapid plate, by diluting the alkali solution, and using bromide in the developer, bringing out the image slowly.

Mr. CLEMONS (visitor) showed a number of fine silver prints on plain paper, prepared by a new process. Both wet and dry plates were used in making the prints (portraits). Mr. Clemons preferring the results from wet plates as having less tendency to flatness. The details in both high lights and shadows, together with the intermediate graduations, were beautifully rendered.

The Secretary showed a convenient device for use in the dark room in cutting plates in half. It consisted of a thin board about 7 x 8 inches, on one side of which a strip of wood was attached $4\frac{3}{16}$ inches from one edge. To cut a 4 x 4 plate in half, it is laid with one end close to the edge of a table or other suitable support. The cutting board is laid on top with the strip pressing closely against edges of both plate and table. This will bring the edge of the board in proper position for use as a ruler to guide the diamond or glass cutter, so as to cut the plate exactly in half without necessity of measuring. Plates can be cut with utmost convenience and accuracy in absolute darkness. Other strips can be added, or the position of strips made adjustable for cutting plates of any required size.

Adjourned.

ROBERT S. REDFIELD,
Secretary.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

REGULAR MEETING, MAY 1, 1888.

President H. J. NEWTON in the chair.

Secretary MASON reported he had received for the section the April numbers of Anthony's BULLETIN, Scovill's *Photographic Times*, Queen & Co.'s *Science of Photography*, and the Chicago *Photographic Eye*. Also copies of circulars for distribution of the International Amateur Photographic Exhibition to be held in Vienna, from September 15 to October 25, 1888. The Secretary read a letter accompanying these circulars inviting the section to take part in the exhibition, and also said, that although the Photographic Section of the American Institute was commonly regarded as a professional society, yet there had always been connected with it some of the most distinguished amateurs in America ; and at each of the monthly meetings quite as many amateurs as professionals were in the habit of attending. He hoped, therefore, that although the section might decline taking any definite action in this matter, that there would be individual members who would contribute and make more notable this proposed international feast.

The Chairman of the Executive Committee reported that there would be an informal meeting of the section on Wednesday, May 16th, at 8 o'clock P. M., to which all interested in practical photography were cordially invited. Also an invitation was extended to all to attend a lantern exhibition to be given at the next regular meeting, June 5th.

Following these announcements the Secretary called attention to some flash-light pictures made by H. G. Borgfeldt at the informal meeting, April 18th. These pictures were examined by several experts and highly recommended. They were not, however, above criticism, and some exceptions were taken to the indefiniteness of the shadow portions owing to a lack in the illuminating medium, or in the developing agent.

President NEWTON remarked, that if the fault noticed was due to the developer he might, perhaps, suggest a remedy as the compound he had lately devised appeared to excel all other developers with which he was familiar.

How to make this compound, and how to use it, he hoped to give in full in an article promised to the Anthony Annual to be published in July of the present year.

The President now introduced Dr. L. H. Laudy who gave a very instructive and entertaining lecture entitled, "The Relative Intensities of Oxy-hydrogen Jets." The Doctor exhibited an array of apparatus needful to the proper illustration of his subject, and with which, he could plainly explain to his auditors the methods of measuring the exact intensity or illuminating power of the various kinds of light in common use, and how the gases used in producing some of these lights could be increased in intensity by mechanical contrivances invented for the purpose. He showed by example the extreme heat of some of these by their fusing power over platinum and steel, and their intensely brilliant light when brought in contact with an incandescent substance like lime.

As the reporter was requested to give only a brief mention of the lecture, as its author intended it for publication in the annual above named, the student who is in any way interested in this subject is referred to this forthcoming volume.

At the close of the discourse, the Doctor exhibited and described, by means of the lantern, one of the most famous telescopes known to modern science ; and also acknowledged his indebtedness to Joseph T. Bedford for his valuable assistance in the preparation and work of the evening.

On motion of Mr. O. G. Mason, a hearty vote of thanks was tendered to both these gentlemen, and the section then adjourned.

Bibliography.

PHOTO-ENGRAVING, ETCHING AND LITHOGRAPHY. By W. T. Wilkinson. Revised and enlarged by Edward L. Wilson of New York: Published by Edward L. Wilson, 853 Broadway.

The work of Mr. Wilkinson has been known in England for some time in a small volume ; but Dr. Wilson has so completely modified, revised and enlarged the book, that we hardly knew it when we received a copy lately. The work is thoroughly practical from cover to cover ; it is well illustrated and nicely printed. It contains the complete instructions and formulæ by an expert in England (W. T. Wilkinson), newly written in the main, which, combined with Dr. Wilson's own contributions and translations from the French and German, make the new book eminently thorough. There is already a demand for this kind of work and many inquiries for instructions come to us. Every one who wishes may now easily learn how to supply plates for all classes of *illustration*, and the book will also show how to select and apply the requisites for production. A demand has surely come, as all newspapers, magazines and crafts use photo-engravings.

In 180 pages, the same size as "*Photographics*," we note that the following subjects are treated in detail and with great clearness: Photo-engraving in line; photo-engraving in half-tone; photo engraving on copper; photo-lithography in line; photo-lithography in half-tone; callographic printing.

We heartily recommend to our readers a book that is so well made and edited as the one before us.

PROFESSOR W. K. BURTON'S BOOK ON PHOTO-MECHANICAL PRINTING PROCESSES continues to attract a good deal of attention. The first supply from England was exhausted and another is here. We are always glad to see good books appreciated and this one of Professor Burton's is particularly thorough and well written. We have already spoken of it in these columns.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

Q.—W. Y. E. writes: My greatest annoyance is from the stretching and shrinking of the albumen paper. It disturbs my figures and heads, even on card size, and twists the mounts all out of shape (and they burnished first class, too). I use heavy cabinet mounts and cannot make them stay anywhere near straight, after burnishing, as others do. If I should mount one of my cabinets on such a thin mount as is used for your BULLETIN illustrations it would roll up and touch the edges together, after burnishing. Is there no remedy, or how shall I reduce the trouble to a minimum? Is it true that paper dried drum-tight in stretcher-frames will not shrink or swell again?

A.—It appears to us that you must make your prints too wet to start with. Use only a stiff paste and as little as necessary. When you are burnishing turn your prints, burnish from the end of the card and then from the side. By following the above directions you should have no trouble.

Q.—J. D. R. writes: I would like to ask a few questions; please answer through columns of BULLETIN and oblige a friend. 1. What size head should be made on 10 x 12 and 11 x 14 plates, to look well and be in right proportion, measuring from chin to edge of hair on forehead? 2. I put a lump of citric acid about the size of a pea in my hypo bath for clearing negatives, which keeps bath from getting black and muddy for two and three months, occasionally putting in a handful of fresh hypo to keep up strength of bath. Is this a good plan, or will the citric acid injure the negatives? 3. Please tell me how to make a good, cheap fuming box, suitable for a traveling photographer, and one in which five or six sheets of paper can be fumed at once. 4. How should I proceed to make chloride of gold for toning, to make from gold coin? You give directions in BULLETIN of March 26, 1887, but I have not got that number. 5. What can I do with diaphragms that the black coating has worn off so they let in light? 6. What is wrong with my 10 inch solar camera lens, that I cannot make a larger than an 8 x 10 print with it. Is the trouble with the cut-off lens? The rays of light cross exactly on the cut-off lens. Box is large enough to make an 18 x 24 print, but the largest print I can get is no larger than the front lens, and not very good at that. 7. What is the best preparation to apply on mounted prints to get a good polish before burnishing?

A.—The heads on the plates you mention should not be much over three and four inches respectively, from chin to hair. The citric acid will not injure the negative; but we doubt if such a small quantity will last so long as you state, it decomposes quite rapidly. In regard to fuming box, an ordinary pasteboard box of convenient size can be used, but a fuming box in which to hang the paper should be made by a carpenter; he will make you a design if you tell him what you want to do with it. Make it black inside with a coat of lampblack and turpentine. We will send you the number of the BULLETIN with the method for gold chloride from coin. You can black your diaphragms by using negative varnish and lampblack, heating the diaphragms before applying the mixture. The trouble must be in your mode of working that you cannot make large heads with your solar camera lens. Such a lens will illuminate a much larger surface than you state. The trouble must be that you do not get your projecting lenses far enough from the condenser. Use white castile soap on the prints before burnishing.

Q.—H. S. J. writes: Is not there a mistake in the formula for hydroquinone developer as given in Dr. Vogel's letter, on page 260 of the BULLETIN for May 12th? 68 80 c.c. are 2¼ to 2⅔ ounces (nearly 1 *grain* of hydroquinone to that amount of solution is very little. Should not the word *grain* be read *gramme* wherever it occurs in the formula? By the substitution of the word *gramme* for *grain*, the formula would be consistent, for I hardly think that Dr. Vogel would use both metric and apothecary's weights in the same formula, or, indeed, use *any other* system than the metric, which is now the only system in use in Germany. Please answer through BULLETIN, and oblige.

A.—You are correct ; the formula should read in grammes. The trouble was in the printer not correcting the error in the proof-sheets.

Q.—W. W. B. writes : Will you be kind enough in your next issue to give me some instructions about copying maps and drawing by photography, that is to say, to get sufficient contrast to make the ground clear white and lines clear black, sharp and well defined; any information on the subject will greatly oblige.

A.—The best advice we can give you is to use transparency plates and do not over-expose. From the negatives so obtained enlargements can be made to any size by using Cooper's Enlarging Lantern, and Reliable Bromide Paper, which works clean and clear. We do not know of any good process to make drawings direct from tracings that will give pure white ground and black lines.

Q.—S. H. writes : I wish to make a photographic copy of a rare book and would like to know how to proceed so as to make a black and white negative. I have two lenses, a Beck Rapid Rectilinear and a Darlot Wide Angle, which do you think would be the best to use for copying the above ? An answer will oblige one of your readers.

A.—Use a Rapid Rectilinear lens, it will give the best results in the shortest time.

Views Caught with the Drop Shutter.

MESSRS. H. S. BELLSMITH AND CHARLES T. STUART of the Insurance Committee of the Photographers' Association of America, were in New York the other day, looking after the underwriters, with whom they had an audience; and we sincerely hope that something will be done to mitigate this outrageous burden upon photograpers. The days of danger from collodion and ether are past, and an ordinary studio is no more dangerous than a dwelling house to day.

THE AIR BRUSH COMPANY again offer two valuable prizes for competition at the Convention at Minneapolis. Air brush artists should prepare now for this competition. Time flies very rapidly.

THE STANLEY DRY PLATE COMPANY have applied for a patent for their new mat, which has overcome all difficulties from mat markings on their plates. The extreme sinsitiveness of these plates necessitates special precautions in the use of mats and these precautions are now taken.

WE regret to note the death of Mr. O. T. DEWHURST, the Secretary of the Lynn Camera Club, who died very suddenly, April 30th, last. Mr. Dewhurst was one of the most energetic members of the Lynn Club, and amateur photography has lost a good friend.

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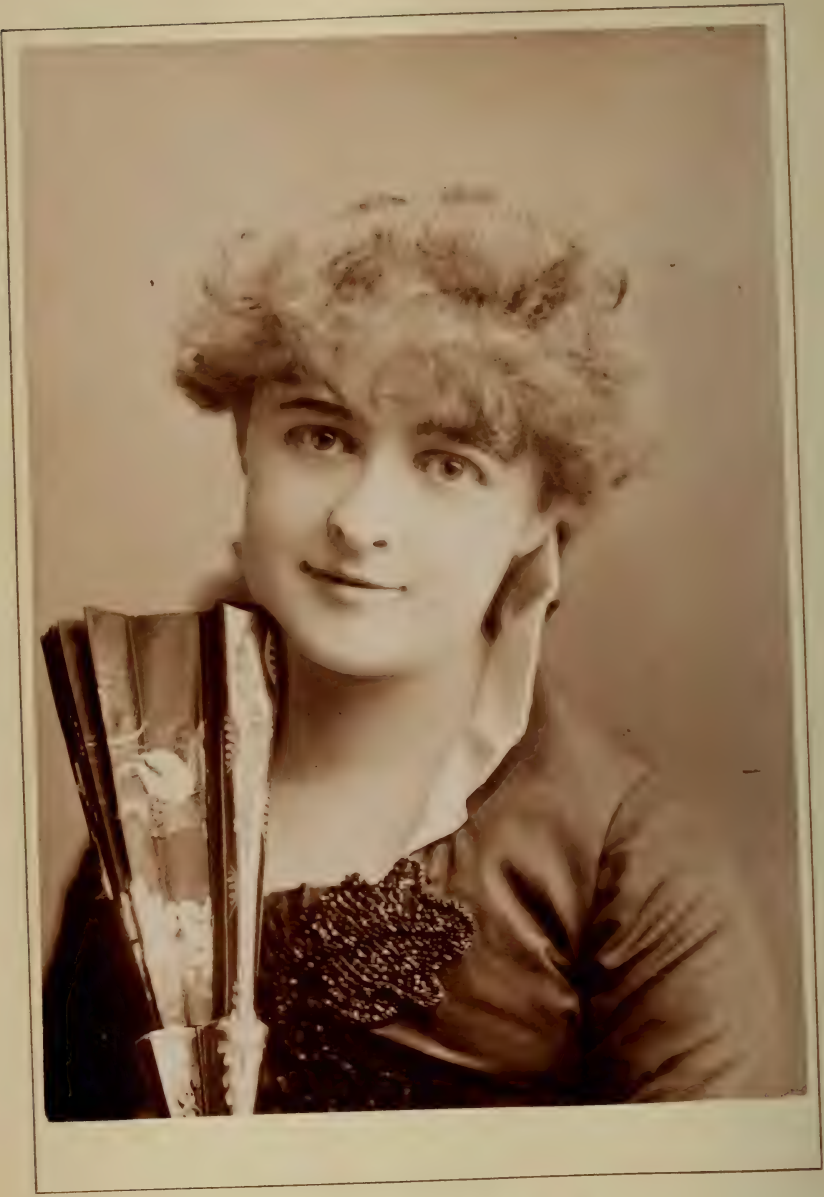

A STUDY,

-BY-

Naegeli

ANTHONY'S

Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

JUNE 9, 1888. Vol. XIX.—No. 11.

MINNEAPOLIS, JULY 10TH TO 14TH.

THE time is rapidly approaching when the earnest and progressive photographer from many points in this great country will turn his face to the beautiful City of Minneapolis. There he will meet his fellow-workers in our art, and see what has been done during the past year.

These annual gatherings of the fraternity are becoming more and more interesting from the fact that they are more and more instructive, and worthy of the attention of every true believer in the wonderful future that is now opening up for photography. These conventions of the Photographers' Association of America have a kind of missionary influence upon the city where they are held, and this influence is still further felt in all the more important communities that surround the centers where they occur. They give the photographers of each section of country an opportunity to become acquainted with the results of the work of those from many other sections. They give the photographers of many sections an opportunity to see the beauty of the various cities and their surroundings where the annual gatherings are held. They give the many workers in our art an opportunity at least once a year to grasp the hands and hear the voices of those whom they can see at no other time and under no such favorable circumstances.

These annual gatherings have become more and more reunions of kindred spirits following the same calling and believing in the same future for our art. To those who think these conventions are tiresome and profitless, we say, if you have been to them and find them so it is largely your own fault. To those who have not been to these meetings, we say, come and enter into them with a spirit of emulation and true progress, and you will return to your homes with a larger idea of the capabilities of our art and a broader view of your fellow-workers.

The man that goes to Minneapolis with the idea that he can walk around, look at the pictures, hear the papers, see the active members at work, and never opens his mouth to ask a question, never attempts to make an inquiry as to how the results presented are obtained, will certainly be disappointed with his visit. But if he goes with the idea that he is one of the association, he is entitled to take part in the meeting, that he can add something to the general stock

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of photographic knowledge, he will go home a wiser and a better man. Wiser, because if he has something of interest to communicate, he will find willing listeners and many eager workers that he can compare notes with, and strengthen his own ideas. Better, because a man that is willing to add his quota to the general stock of knowledge of any kind, is honored by his fellow-man and commands a respect and admiration that money can never buy.

As a stimulus to the achievement of useful and practical results the association gives a large number of medals every year to be competed for by its members. In addition to these, various manufacturers seek to stimulate certain lines of work that they are financially interested in and also offer prizes. All these prizes are worth working for, and they bring out each year an array of pictures that command the admiration of all who see them, in the skill, artistic feeling and photographic ingenuity that are combined to secure the results presented.

In the meetings the experience of the past twelve months is reviewed in various papers, and communications of importance on special phases of our art, bring forth discussion that call out the practical daily experience of the best workers in photography.

Go, then, to Minneapolis on July 10th next, and if for no other purpose then to take a few days off from your studio; meet some of the best and most earnest workers in our art; take a new lease of life in the society of those men who have the energy that has made the great Northwest the admiration of the world, and whose works speak louder than words. With them you will receive new vigor for your coming days and a larger idea of those who are laboring in the same fields of usefulness as yourself.

EDITORIAL NOTES.

We note in some of the photographic journals that the question of taking up fire insurance in the Photographers' Association of America has been discussed. We think that this is useless. It will require far too complicated an organization to carry this out, and will only be a source of trouble to all connected with it. While we are strongly in favor of the mutual benefit feature which has been proposed, we would not advocate any fire insurance scheme. The beauty of the benefit feature is its simplicity and the ease with which it can be managed, but the fire insurance scheme would involve so many complications and difficulties that we should be greatly afraid it would lead to disorganization of the whole association.

The new "Annual" by our Associate Editor and W. Jerome Harrison, is rapidly approaching completion, and will be a veritable storehouse of photographic knowledge. There will be over two hundred papers by such men as Captain Abney, Dr. Vogel, Andrew Pringle, W. K. Burton, Sir Howard Grubb, Dr. E. L. Wilson, John Bartlett, Fred. E. Ives, Victor Schumann, Dr. L. H. Laudy and others. As the volume is already in demand, we expect that the edition will be exhausted soon after publication.

We note the formation of a new organization in Paris under the title "La Lumiere" which consists of those who are interested in photography and electricity. At present the organization is provisional, and M. Jeanmaire is Presi dent with MM. Bacquet and J. Ferry as a committee to take steps to obtain members. It is rather a curious combination of interests.

Dr. JOHN HABIRSHAW, whose patient work in cataloguing diatoms has given him a wide reputation, and who is likewise one of our best amateur photographers, both with the microscope and the ordinary photographic objective, has recently gone to Europe. There is no doubt be will find much to interest him in his various studies, and photography will receive a large amount of his attention. We hope he will return to us laden with many new photographic ideas, and that he will give us an account of them for the columns of the BULLETIN.

Mr. WILFRED A. FRENCH, of Boston, sends us a couple of pieces of his handsome work in photography. One of these is a capital picture of a lady with a cat in her lap, and is exceedingly well done, every hair of pussy's coat stands out very clear, while the portrait of the lady and her drapery are very good for such a quick exposure. The other picture is a capital portrait of a female head, with an uncommonly graceful pose, giving a very artistic air to the picture.

HARGRAVE & GUBELMAN send us a capital cabinet head of a child, that is remarkable for its softness and general beauty. The subject is a pretty one, and the picture is worthy of it.

THE Executive Committee of the Vienna Amateur Exhibition desire us to say that all exhibits forwarded, freight paid, to Messrs. Schencker & Co., 64 Moorgate street, S. E. London, England, will be forwarded thence to Vienna and return free of charge. See former notice.

A MOONLIGHT photograph comes to us from Mr. A. A. Line, of Carlisle, Penna. It is not a bad effort; but we think the main fault is in the exposure, which was too short. Perhaps better results would be obtained with longer development, in which case there is a danger of fog. Nevertheless, the picture is quite good.

OUR good friend W. G. C. Kimball, of Concord, N. H., sends us a number of beautiful views taken in Bermuda. It is needless to say that the work is well done. The views are exceedingly pretty, embracing scenes along the coast, showing weathered rocks and shipping in port. Also a fine view of the Hamilton Hotel and grounds; others illustrating the tropical foliage, ruins of ancient forts, and a capital instantaneous shot at the yacht Undine in a race. We consider these a valuable addition to our portfolio.

WE are indebted to the Hartford Camera Club for an invitation to their fourth annual outing on May 30th last at Greystone, Conn. We regret very much that we could not be present, as we thoroughly believe in these "outings." They stimulate good health, good photography, and good friendship. We hope to have better fortune next time, and tender our best thanks to the Executive Committee for the invitation and also for the handsome badge.

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

Improvement of Vogel's Instantaneous Shutter.—Uranium and Lead Intensifiers for Dry Plates.—Balloon Photography.—New Wide-angle Lens. Photography on the Stage.

In my letter before the last I gave you a description of a most simple instantaneous shutter with a drawing of the same. It has met with a quick and favorable introduction among the amateurs here and has also experienced already some important improvements. Dr. Tobold, one of the Emperor's physicians and a most zealous amateur, has made an original improvement, by gluing the lens cover to the lower part of the pasteboard (Fig. 2, page 228) so as to avoid the use of two hands in opening the objective.

A good deal has been written already about the intensifying of dry plates. It is a fact that the numerous intensifiers which can be used for wet plates, are only partly applicable for dry plates. This is particularly the case with the last intensifier discovered by Dr. Eder, and Selle's uranium intensifier. Both intensifiers act only slowly and oftentimes the plates become spotty and of uneven density. Himly's intensifier removes this defect, but the composition of the same has not been published. The reason of the defect is, according to Dr. Eder, in the tanning of the gelatine film by the red prussiate of potassium, which both intensifiers contain, and whereby the solutions are prevented to penetrate the same. My son, E. Vogel, tried to counteract this by dissolving the gelatine. To this class belong several acids, as for instance, formic acid, acetic acid, citric acid, oxalic acid, etc. And indeed, a first test proved at once that a corresponding quantity of such acid would prevent the tanning of the gelatine.

Thus he obtained splendid results by addition of glacial acetic acid to the red prussiate of potassium intensifiers. The action is surprising. The following intensifying formulas with acetic acids give an intense coloration in a few minutes, while the same intensifier during the same time without acetic acid will remain almost without effect. He uses the following mixtures :

1. Uranium intensifier after Selle.

Red prussiate of potassium 1:100 of water...........................	50 c. c.
Nitrate of uranium 1:100 of water..................................	50 "
Glacial acetic acid..	10–12 "

The well-washed negative—wet or dry—is laid into the solution until it has the desired density, after which it is washed for about ten or fifteen minutes (if the washing is extended too long, the intensification will go back again ; although this is only of advantage with our intensified plates, as they can be reduced again as occasion requires it.

2. Lead intensifier after Eder.

Nitrate of lead..	4 grams.
Red prussiate of potassium....................................	6 "
Water..	100 c. c.
Glacial acetic acid..	10–12 "

The plates assume a whitish gray color in this bath. To give them a darker color, they are washed for a short time and can be treated now, according to the character of the negative, in different ways.

For negatives with half tones it is recommended to color the whitish gray plates blue by immersing them in a bath of 1 grain chloride of iron in 10 c. c. water and then to transform this blue color into yellow brown by diluted ammonia. Reproductions of line engravings can be given a strong covering color by permanganate of potassium or bichromate of potassium with ammonia, chloride of copper, etc., with permanganate of potassium colors dark brown, bichromate of potassium with ammonia yellow to red, chloride of copper brownish-red. The uranium intensifier is to be preferred to the lead intensifier on account of its greater simplicity.

Particular attention is paid here at present by the military division of balloon navigation to balloon photography. During the last month a number of views have been taken, which were shown to the German Association for the Advancement of Æronautical Navigation, and received unanimous approval.

The department applies photography in three directions: first, for the investigation of balloon covers, ropes, etc., by means of microphotography; second, for the instructive representation of the manipulation in ascensions (ballooning), and lastly—and this is the most important—for views from the balloon.

With regard to the latter the department can show results which surpass everything done heretofore in this direction. The views have been taken from the most different elevations from 200 to 2,500 meters; and particularly well executed is a view from Schoneberg, three views of the Potsdam suburb, one view of the Belle-Alliance square to the Donhofs-platz, and a full view of Berlin from the north at an elevation of 1,700 meters, which, notwithstanding its great distance, is exceptionally sharp. Part of the pictures could be used for enlargements, being intended in that form for military use. The enlargement is direct from the first plate upon bromide of silver gelatine paper.

Photographing from the balloon is generally pretty difficult. By a number of judicious arrangements held secret in the interest of the service, the difficulties have been overcome. The department is also trying their best to complete its scientific material as much as possible. So they have introduced for instance a thermograph (constructed by Mr. Ney) for the purpose of determining changes of temperature or currents in the air.

In a future campaign the balloon may play its role in connection with photography, being able to fix the position of the enemy with one coup from the balloon.

This is so much more important, as it is no easy matter to hit the balloon with any projectile, all our guns and cannon being calculated for horizontal use. Not a single balloon suffered from bullets during the siege of Paris in 1870; and to be effective for such purpose new guns would have to be constructed. It is possible that the balloons may then fire at each other away above the clouds.

Since the introduction of the highly sensitive dry plates pains have been taken to apply lenses of smaller construction in place of the larger clumsy ones heretofore in use, covering the same fields. One has even proceeded still further by using no lens at all, and photographing simply through a fine aperture. This is possible of course, but the pictures are never very sharp. Without lens you cannot produce a handsome picture. The lens for landscape and viewing purposes is of course desired to be as light and simple as possible. Voigtlander has recently returned to the single achromatic lens instead of the double one and he furnishes now a wide angle lens with an angle of 76 degrees. So far I have seen only samples, which will have to be submitted to a thorough test before they can be made in all sizes. The construction of the same is as simple as possible consisting only of two lenses, a bi-convex lens made of crown glass, and a bi-concave lens, fastened to the former. The glass for these lenses is manufactured in the technical glass laboratory at Jena, and after entirely new principles. Lenses of this kind have not existed yet, and they deviate in their optical properties entirely from the kinds heretofore known.

Both glasses are extremely light and of very little dispersion, being to the refracting index in great disproportion, in such a way that the lens, which is made of flint glass in other objectives, resembles in its property more that of a crown glass lens.

By application of such glasses considerable advantages have been obtained, which consist principally of an extremely even picture, from which results again a very large visual angle (76 degrees) and the distortion of straight lines on the edges of the picture is reduced to a minimum.

As a matter of course, no single objective of whatever kind is entirely free from this defect; but the objective being intended only for landscapes, where straight lines on the edges can easily be avoided, this defect will not be of much account for a landscape lens.

Finally, I would like to tell you something about photography on the stage. In many comic plays photographers have already appeared on the stage and have been subjects in comic scenes.

But now photography plays also a certain role in a new tragedy, written by the celebrated Norwegian poet Ibsen, and called "Wildente." One of the principal actors in the piece is a photographer, whose classical studies were interrupted by the reduced financial circumstances of his father and who thus became a photographer. For this purpose he marries a housekeeper who understands retouching and is more diligent at work than her husband, who, for hours, studies at some new invention by which photography shall be elevated to the rank of art. He never succeeds in his invention and acknowledges finally that others before him have already arrived at this invention.

The practical part of photography is not demonstrated on the stage; retouching and burnishing being the only points. Finally the photographer commits suicide, but with a revolver and not with cyanide. The shooting seems out of place, and cyanide would be the more proper thing. Otherwise the play is much admired.

BERLIN, May, 1888.

In Dr. Vogel's letter, on page 260 of the BULLETIN for May 12th last, we note a serious error which our readers will please correct. In the formula there given the word "grains" should read "grams." All the weights and measures used by our esteemed correspondent are always in the metric system.—Eds. BULLETIN.

◆

ZEKE (breaking wood): "My mammy gibs me a penny ebery day fer choppin' dis wood."

ABE (enviously):—"Am dat so? An' wot do yo' buy wid dat cent?"

ZEKE—"Oh, I doan buy nuthin', 'cause mammy am savin' 'em fer me to buy a new ax wen dis heah one gits played out."

BOSTON EXHIBITION.

SECOND NOTICE.

WE have only enough space allowed us to notice very briefly the more important exhibits at Boston, besides those of the prize winners.

W. S. Briggs, of the Boston Club, had a notable exhibit. Among the best pictures we may mention "New Jerusalem Church, Roxbury, Mass.," and another called "Arcadian Days."

John H. Matthews, of Brooklyn, N. Y., had a number of pretty groups, all of which were uncommonly well done. One, entitled "Two Figures," was especially good; the posing was excellent; the natural background, and the artistic feeling in the whole picture was very pleasing.

Dr. Charles L. Mitchell, of the Philadelphia Society, had an exhibit that showed very skillful work and a keen eye for pretty effects, "The Old Mill, Adams Brook, Pike Co., Pa.," was a charming bit of picturesque photography.

John H. Tarbell, of New York, had several composition studies of unusually good character. One, entitled "A Struggle for Fame," a lady sketching her own portrait from a reflection in a mirror before which she is sitting, was an excellent piece of work and a very effective picture.

W. O. Witherell, of the Boston Club, had a number of pretty views showing good, clean photographic work. One of these, "View of Woods at Clarendon Hills," was uncommonly good, a pretty picture and well-executed photographic work. A number of Interiors in this exhibit were also very good indeed.

Edward R. Schedler, of the New York Society, had but one picture, and this made by the magnesium flash-light. It was his own portrait and was decidedly the best piece of work with magnesium light shown at Boston. It was notable for the detail in the shadows and general good lighting.

Henry G. Keasby, of Philadelphia Society, had a good exhibit and showed a number of very pretty views; but the prints were a little too dark.

Franklin Harper, of the New York Society, had a number of very pretty pictures: "A Woodland Brook," "The Babies on our Block," "Library and Billiard Room," were all very well done. But the gem of the collection was a picture of two little children kissing, entited "Good Morning." This was a charming picture and thoroughly well done.

Robert S. Redfield, Secretary of the Philadelphia Society, had a few pictures, but they were of the highest order of merit. Several of these studies were exceedingly well done. Two, illustrating the nursery rhyme,

> There was a young lady,
> And what do you think,
> She lived upon nothing
> But victuals and drink,

consisted of a very pretty little girl, in one, eating, and in the other drinking. The posing, lighting and action of the two pictures made them very effective, and they had crowds of admirers at the exhibition. Another good study, by the same exhibitor, was "A Constant Reader," a boy very earnestly reading a newspaper.

Arthur L. Plimpton, of the Boston Club, had some particulary fine Interiors, well lighted, and showing good photographic work.

Frederick D. Stackpole, of the Boston Club, had a number of pretty views. "View at York, Maine," was particularly good and picturesque. Also the "Train Crossing Bridge at Full Speed," which contained some very pretty cloud effects.

John Boyd Thacher, of New York Society, showed a number of excellent instantaneous pictures. "The Chicago Flyer, at 45 Miles an Hour," being one of his achievements. "Bobbing, an Albany Winter Sport," a coasting scene at Albany, N. Y., was very good. Also his studies, "A Greek Model," and "Tragedy." The latter being very fine.

George H. Eaton, of the Boston Club, had the best frame of portrait studies we have ever seen executed by an amateur photographer. They were very close to the best work of our professional photographers, and far above the average.

They were well lighted, the posing was artistic and natural, and the general effect of each picture was exceeding life-like.

Zachary J. Benson, one of the New York Society, had a number of pretty views that were well done and quite picturesque, showing much artistic feeling in the selection of the views.

Richard H. Lawrence, of the New York Society, had several pretty views taken at Bahamas with a detective camera and enlarged to 8 x 10. The enlargements were well done, one of them being on platinotype paper.

C. R. Pancoast, of the Philadelphia Society, had some clean and clear work; one picture, a piece of machinery, being very good; and two views that were picturesque spots in Connecticut.

Chas. H. Currier had one of the best exhibits shown by members of the Boston Club. It consisted of views, groups, interiors, and portraits all of which were well done. The "Peep O'Day Tennis Club" was an uncommonly charming group, against an old stone wall background. "Wood Interior, Magnolia, Mass.," was a beautiful piece of woodland photography. The surf views at Nahant and the Interiors were work of the highest merit of order.

W. Garrison Reed, of the Boston Club, had a number of very pretty views, the best of which was "Kearsage Brook—Down Stream to The Birches, North Conway," which was an uncommonly pretty bit of scenery.

Miss Catherine Barnes, of the New York Society, showed a large number of evidences of her skill in artistic photography. Interiors, landscapes, groups, portraits and studies were all very well done. The pictures we most admired were "Parlor View," "Dining Room" and several of the landscapes, in which the foliage was particularly well done.

Alfred Munroe, of Concord, Mass., had a most interesting series of cloud studies that were exceedingly well done.

Wilfred A. French, of the Boston Club, had a number of charming pictures. A frame of views from Bermuda, Rangely Lakes, Bar Harbor and other picturesque spots, all told of the trained eye of the exhibitor. There was scarcely a picture that did not have some artistic feeling in it. The photographic work was well done, and the pictures were clear, sharp, and showed that the negatives were of the best character.

Edmund Sterling, of the Philadelphia Society, had several excellent pictures. The views of cattle and sheep were very fine.

J. Prime Loud, of the Boston Club had some very fine architectural studies that were full of excellent photographic work.

Henry U. Sweet, of the Boston Club had a frame of very beautiful views. We cannot speak of any one view especially, they were all very good indeed.

George E. Cabot, of the Boston Club had four charming views. Two views in Keene Valley, Adirondacks, were especially well done, particularly the foliage.

Francis Blake, of the Boston Club, had two pictures that we admired very much. A "Cattle Group," which was very fine, and an instantaneous shot, "Railway Train, 48 Miles an Hour;" this last being uncommonly well caught.

O. A. Eames, of the Boston Club, showed a number of surf pictures, which were among the best we have ever seen, and certainly the best in the Boston Exhibition. These pictures should be seen to be appreciated.

George A. Nelson, of the Lowell Association, had but four pictures; but they were the best views of that size (5 x 8) in the Boston Exhibition. They were pretty, artistic, well done photographically, and the effects of light and shade were of the most pleasing character. One picture, "The Last Furrow," a plowing scene, was particularly well done, the artistic effect of the light and shade upon the horse and man being very beautiful.

(*To be continued.*)

All communications for the columns of the BULLETIN *should reach us on Monday preceding the day of issue, to insure their publication at that time.*

[*From Photographisches Wochenblatt.*]

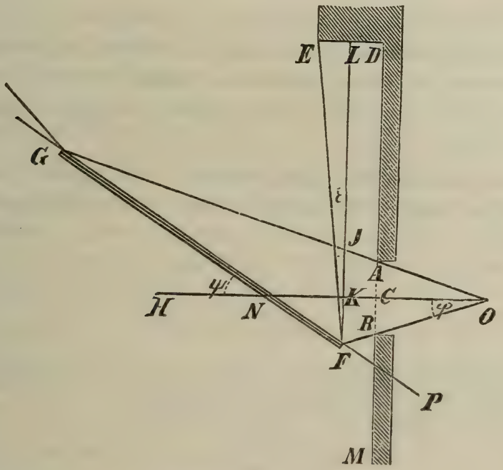
THE ILLUMINATION OF NEGATIVES FOR ENLARGEMENTS WITH THE CAMERA.

BY F. STOLZE.

(*Continued.*)

D. Position and Size of the Reflectors.

FOR the most frequent case: that of the axes of the enlarging apparatus laying horizontally—the whole sketch being given without regard to points expressed under *C—I* will determine position and size of the reflectors; and first for the case treating about mirrors.



In the figure the outside of the wall of the room in which the enlarging apparatus is placed, is designated by DM; AB is the opening for the light, O the optical center of the projecting objective and ED a projecting board, preventing the light in the line DA from falling upon the mirror FG. If the lines

$OC = a.$ $AC = CB = d.$ $ED = e.$ $DC = LK = h.$

$FG = l.$ $FK = KJ = b.$ $KC = LD = g.$

are put down, also the angles

$GNH = \psi$ $JOK = KOF = \varphi$ $EFL = \varepsilon$

it is easy, to find a formula for the length of the mirror.

With regard to $\Delta\, ELF$ is $g = e - (h + b)\, tg\, \varepsilon$, and with regard to $\Delta\, FKO$ is $b = a\, tg\, \varphi + g\, tg\, \varphi$, *or* $a\, tg\, \varphi$ being $= d$, $b = d + g\, tg\, \varphi$ therefrom resulting a second expression for g: $g = \frac{b - d.}{tg\, \varphi}$. By equalizing both formulas for g, the result will be $e - (h + b)\, tg\, \varepsilon = \frac{b - d}{tg\, \varphi}$ or $e\, tg\, \varphi - h\, tg\, \varphi\, \varepsilon - b.\, tg\, \varphi.\, tg\, \varepsilon = b - d$, and the result herefrom

$$b = \frac{d + e\, tg\, \varphi - h\, tg\, \varphi\, tg\, \varepsilon}{1 + tg\, \varphi\, tg\, \varepsilon}$$

In the triangle GJF is now $JF = 2\,b$, $< GJF = 90 + \varphi$, $< GFJ = 90 - \psi$, and therefore $< JGF = \psi - \varphi$. One obtains therefore for l

$$l = 2\,b.\ \frac{sin.\ (90 +.\ \varphi)}{sin.\ (\psi - \varphi)} = 2\ \frac{d + e\, tg\, \varphi - h\, tg\, \varphi\, tg\, \varepsilon.}{1 + tg\, \varphi.\ tg\, \varepsilon}\ \frac{sin.\ (90 + \varphi)}{sin.\ (\psi - \varphi)}$$

In this formula either the angle ψ or angle E may be eliminated, the relation

$E = 90 - 2\,\psi - \varphi$ being a consequence of the equality of the angles $E\,F\,G$ and $O\,F\,P$. Corresponding herewith we obtain the two formulas

$$l = 2\,\frac{d + e\,tg\,\varphi - h\,tg\,\varphi.\,tg\,\varepsilon}{1 + tg\,\varphi\,tg\,\varepsilon}.\ \frac{sin.\,(90 + \varphi)}{sin.\,\frac{90 - \varepsilon - 3\,\varphi}{2}}$$

$$= 2\,\frac{d + e\,tg\,\varphi - h\,tg\,\varphi\,tg\,\varepsilon}{1 + tg\,\varphi\,tg\,\varepsilon}.\ \frac{cos.\,\varphi}{sin.\,\frac{90 - \varepsilon - 3\,\varphi}{2}}$$

$$l = 2\,\frac{d + e\,tg\,\varphi - h\,tg\,\varphi.\,cotg\,(2\,\psi + \varphi)}{1 + tg\,\varphi.\,cotg\,(2\,\psi + \varphi)}.\ \frac{cos.\,\varphi}{sin.\,(\psi - \varphi)}$$

With the aid of the differential method expressions for the values of ψ or ε can now be developed from these formulas, for which l will become a minimum. But as the same are not developable for a certain function of ψ or ε, they are of very little practical use, and I will pass their development, the following making it superfluous.

The simplest case is evidently the one where the values l and ε will become equal to O. The value l belonging hereto I will designate with L. The result will be:

$$L = 2\,d\,\frac{Cos.\,\varphi}{Sin.\,\frac{90 - 3\,\varphi}{2}}$$

Provided now that 30 degrees are made use of as the maximum angle for the enlargement, that φ is $= 15$ degrees, one obtains

$$L = 2\ d\,\frac{cos.\,15}{sin.\,22\tfrac{1}{2}} = 2.\,5201 \times 2\,d.$$

That is the mirror has to be two and a half times as long as the light opening in the vertical wall under E is high. Thereby is $2b = 90 - \varphi$, also $\psi = 37$ degrees 30 minutes. It is to be well considered that in this case $A\,B$ and $J\,F$ will come together and lay vertically under E. To be always able to embrace this simple construction, even if a projecting board, $E\,D$ is existing, it is only necessary to make a screen with the opening vertically under E, or the reflecting point F is placed vertically under E, leaving off the screen, and instead of the value d of the opening, into which the negatives are put, the value $d\,\frac{a + e}{e}$ is taken into account, so that one obtains

$$L = 2\,d\,\frac{a + e}{a}\quad\frac{cos.\,\varphi}{sin.\,\frac{90 - 3\,\varphi}{2}}$$

If the calculation is to be avoided, there remains nothing to be done but to place any mirror for a trial in such a way before the opening, that from the optical center of the objective one can see the mirror to cover the whole opening and perceive in it only the reflection of the sky. Covering all parts of the mirror not visible from this point, one will find out how large the surface of the mirror has to be. By different inclinations of the mirror one can thus determine also practically a minimum value for its surface. This method is, probably, for most practical workers, the most convenient one.

If mat reflectors and not reflecting ones are in question, all values which are agreeable for the latter, are of course likewise useful. But in this case there are still numerous other dimensions and inclinations of the surfaces admissible, it being here of no consequence that incident angles and reflection angles are the same. In this case it is indeed the best to apply the last described method for reflecting mirrors, and only to take care that the mirror surface, from the optical center of the objective, fills the whole opening and appears entirely evenly illuminated.

C. *The Determination of Exposure.*

Already at some previous opportunity I explained this method and described an instrument herefor, which I also recommend in this case. However, as I cannot suppose, that every reader of the *Wochenblatt* has read my former article, I will give again a complete description, doing my best at the same time, to make it applicable to the resources generally in the hands of every photographer.

At first it is necessary to find out the printing density of the negative in question. For this purpose a direct paper print is made in the printing-frame, and during this time a strip of the same paper is placed under a scale-photometer, for instance Professor Vogel's, in close proximity to the printing-frame. As soon as the print is ready, the photometer is examined, and the last number that became visible is noted as printing number of the negative. This demonstrates clearly that all negatives with the same printing number have the same time of exposure, provided the light source has been constant, and that negatives with different exposure numbers have a time of exposure proportionate to the time numbers taken from the corresponding table. An example will show this clearly. Supposing Vogel's scale-photometer had been applied, and the printing number 8 had been obtained for some negatives, for others the number 11, and for others again number 17; Vogel gives now for the scale values of his photometer the following table:

GRADES.	DETERMINED QUANTITY OF LIGHT.	GRADES.	DETERMINED QUANTITY OF LIGHT.
1	1.27	16	44.89
2	1.61	17	57.01
4	2.59	18	72.51
6	4.17	19	92.08
8	6.70	20	117.50
10	10.84	21	149.22
11	13.86	22	189.17
12	17.38	23	239.7
13	22.11	24	300.7
14	27.88	25	391.9
15	35.45		

The necessary time of exposure for the negatives with the printing numbers 8, 11 and 17 is therefore like 6.70, 13.86 and 57.01, provided, of course, that the same objective with the same opening was used, that the size of enlargement is the same and that the light source is a constant one. For all artificial light sources as treated by me under A, the problem can be considered as hereby solved, for it is now only necessary to determine the correct time of enlargement for any certain printing number by some experiments, to serve as guide for all others.

More difficult is the matter with light sources of changing intensity, also particularly in daylight. But photometric help will here also surmount all obstacles. If a photometer with sensitized printing paper is placed close to the negative to to be enlarged, so that it is illuminated in the same manner as this, it is only necessary to observe the degree of light of the paper to know how long a time of exposure the negative has received.

While the inspection takes place the light, of course, is cut off from the negative, and the photometer is examined by a chemically ineffective light. The above example may also find acceptance here. The nnmbers are 8, 11, 17. Suppose it was known by previous tests that negatives of printing number 8 require a time for enlargement, by which the number 2 becomes visible in the photometer. The light quantity, 1.61, is adequate to photometer degree 2 as shown by above table. The light quantities for degrees 8 and 11 being now proportionate to 6.70 and 13.86, a light quantity $= \frac{1.61 \times 13.86}{67.0} = 3.33$ is required by an enlargement for the negatives of printing number 11. But in the photometer this is equal to number 4, while number 6 is hardly visible. The exact degree number is 4.7.

For negatives of the printing number 17, one obtains in exactly the same manner as in the enlargement determined, light quantity $\frac{1.01 \times 57.01}{6.70} = 13.7$. But to this number belongs number 11, according to the table. It is hardly necessary to add that a photometer during the enlargement of negatives with printing number 11 has to show the degree number 4.7, number 17 the degree number 11. But it is still more convenient to note the determined light quantities upon the negatives as printing numbers instead of the degree numbers.

How changes in diaphragms as well as in the enlargement have to be considered, I need not explain. This is done in well-known formulas and tables.

Important is yet the choice of the photometer paper for the enlargement. The most suitable is the same bromide of silver paper on which the enlargement is made. But this has to be soaked in a 5 per cent. solution of nitrate potassium or sulphite of soda, and dried in the dark. Such a paper, as also all chloride of silver papers, acquires a medium slate-gray color.

Translated by H. D.

SOME PRINTING EXPERIMENTS.

BY EDWARD LEAMING.

[Read before the Society of Amateur Photographers of New York.]

Mr. President, Ladies and Gentlemen : During the past winter I have been engaged in making a series of experiments in printing and toning, using, mainly, plain salted papers of various kinds. While the albumen print, with its bright, glossy surface, is undeniably beautiful, and no doubt will long prevail with the popular taste, to my mind, the effects to be had by the use of mat surface papers are preferable for their artistic values, and I am not alone in thinking this way, as can be seen by reference to the publications of the last few months, both in this country and abroad, several gentlemen connected with the various societies having read papers in which they declared themselves to be greatly in favor of mat surface prints; to this feeling, no doubt, is also due the extensive use of bromide and platinotype papers. I have not found the bromide paper to be entirely satisfactory, the generality of results being cold and sometimes harsh; the platinotype also gives cold tones, which may be varied by a sepia, but none have the effect or variety of tones that can be obtained by the use of plain silvered paper. The paper that I have found most suitable for general work is known commercially as plain Saxe paper; Rives, No. 74, also giving good results, the method of procedure with which most of you are doubtless already familiar, can be briefly outlined: The paper is first salted by floating on, or immersion in, a solution of chloride of ammonium in water, the strength of the solution being from 8 to 12 grains to the ounce, or a mixture of the chlorides of sodium and ammonium may be used; it it then hung up to dry, and can be silvered as soon as dried, or be kept for any length of time before silvering; the silvering can be performed on the ordinary bath, or a special strength of bath may be used for special negatives, or a silver bath of the ammonio-nitrate of silver may be used; the paper is then hung up to dry as before, and, in the case of the ordinary silver bath, can be fumed before printing; in this stage the paper will keep good for three or four days if excluded from light, the ammonium nitrate paper spoiling soonest; after printing it is toned in the ordinary manner, or with special toning baths, or may be fixed without toning, each process having its individual peculiarity of result. If unsized papers are used, it will be found best to size them before salting, or they can be salted and sized in the same bath. Gelatine is frequently used for this purpose, also Iceland moss, and various resins. While I have tried several different salting and sizing solutions, and also various toning baths, I have made special experiments in the use of different papers, such as varieties of Japanese parchment papers, Japanese tissue papers, Whatman's drawing paper, the paper that is used for bromine prints, and even the common cardboard mounts themselves, each paper giving a different result, so that you have at your command an almost infinite variety of tones and effects. To begin with the plain Saxe or Rives papers, I have here some specimens from both, direct and enlarged negatives. The paper was salted in a bath containing 12 grains of the chloride of ammonium to the ounce of water, then silvered in a bath containing 40 grains of nitrate of silver to the ounce of water, and toned in a bath composed of carbonate of soda, 50 grains; phosphate soda, 62 grains; chloride of sodium, 30 grains; water, 32 ounces, with gold from 10 to 15 grains, the result, as you see, being from purple tone to a warm black. The next specimens that I have to show you were salted and silvered in the same manner as the first, but were toned with platinum. I tried at first some of the published platinum toning formulas, but although I obtained some good results, they were so irregular that I tried to devise a formula of my own, and found one that, to me, seems perfectly satisfactory. It is composed of platinic chloride, 1 grain, and 16 ounces of water, neutralized with potassium carbonate, and ½ to 1 dram formic acid added. If the toning is carried far enough, a fine platinum black is the result. Warmer than the platinotype, if not carried so far; a sepia results, which is admirable for some subjects. In all these manipulations with plain paper, overtoning is to be avoided, as a flat print is always the result. The toning with platinum has this also to recommend it, it is the cheapest form of silver printing, with toning that I know of; cheaper than gold. I have successfully toned two 18 x 22 sheets of paper with one grain of platinum, although usually I allow 1 grain to each sheet; in those last specimens, you will notice one that was silvered with ammonia nitrate solution; here are some others treated the same way, and to show you the difference I have mounted on the same card a print from the same negative, silvered and toned in the regular way; you will notice that the plain silver bath gives warmer tones, the ammonia nitrate giving a bluish black; one of the prints from the ammonia nitrate bath I toned with acetate of lead, with the result of a warmer tone; and here are some specimens comparing the tone produced by acetate of lead, and by the phosphate of soda bath, and also by the chloro-bromide toning solution; one of them has been fixed without toning. All these prints were fumed with the exception of those so marked. These two pictures were printed on the ordinary common cardboard mounts direct, one was toned and one was fixed without toning. And here are two printed on Whatman's double-elephant paper, the paper being unsized, the image has a sunken appearance. This one is printed on French torchon mat paper, such as is used for mats on engravings, etchings, and the like; it was sized with gelatine.

The next that I have to show you, are on Japanese tissue paper—I call it this for want of a better name—it is used by the Japanese for wrapping up small articles, such as bronzes, etc., and is very inexpensive. Some I have toned in the chloro-bromide toning solution, others in the regular way; and others still, fixed in hypo without toning, the effect produced is very like an India proof etching; the paper is of long fiber and very tough, and will not tear easily, even when wet, but must not be rubbed, as then it rolls up like moist blotting-paper. I have a few here on the paper that is used to print the India proof etchings; you see the tone is very different. I have also here some prints on Japanese parchment paper of two grades, light and heavy, and also some from the same negatives on the tissue paper, as a comparison; the red obtained on the parchment paper by simply fixing, without toning, I think quite handsome. Of course it is quite impossible to see fully the tones by gaslight; they present a very different appearance by day; and these moonlight effects, I am afraid you cannot see at all, because their chief beauty is in their tone, which is a delicate olive; they are on albumen paper, as you see, and are from Mr. Singer's beautiful negatives. The way to obtain them is to over-print very much, in fact "burn the print," as photographers say, then tone and fix in the regular way, and then immerse in a bath containing 1 dram of hydrochloric acid to 20 ounces of water; transfer them back to the hypo, and if not light enough, reimmerse in the acid bath; this can be repeated as often as desired, but always be sure to end with the hypo bath, after which, wash in the regular way.

In conclusion, I would like to call attention to the fact that the plain paper prints may be reasonably said to be permanent; there are quite a number of instances where prints made from twenty to thirty years ago, are still as good as when made, showing no signs of fading, that bugbear of the photographer, and which, I believe, is mainly due to albumen, and not hypo, as has been stated in some publications.

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OF all the photographic publications I have had I prize the BULLETIN most.

G. S. SMITH.

SIMPLE DEVICES FOR CUTTING OUT LANTERN SLIDE MATS.

BY JOS. P. BEACH.

[Read before the Society of Amateur Photographers of New York.]

THE costly nature of lantern slide mats as now supplied by the various stock dealers has led me to devise a simple plan by which an amateur may make hundreds of mats at cost of a dozen, when you have to buy them. And as the mat very often has a great deal to do with the proper setting off of the picture it is well for the amateur who is interested in this subject to provide tools for producing varied sizes and shapes to fit any given picture.

My method consists in taking a block of hard mahogany, apple tree or pear tree wood with the end grain upwards and about an inch and a quarter thick, and as large in size as an ordinary lantern slide plate and marking on the surface with a lead pencil the form and size of the mat you want, but perhaps a trifle smaller than an actual size. Then with proper tools, chisels and files I take off of the block, a half an inch in depth, the wood, until it assumes the oval or square marked out.

I back up the magohany block, with half an inch of a softer kind of wood, securing it by screws and bore a hole through the center three-eights of an inch in diameter. This permits the air to reach the center.

Around the wood form thus made I bend an ordinary clock spring, which can be bought very cheaply and is usually about three-quarters of an inch wide and secure it to the wood by screws.

I prefer to do this with the aid of a vise, putting in one screw at a time until the circuit is completed. The pressure of the vise holds the steel against the wood, in place, until it is fastened by the screw.

Before the steel is bent around the wood form, holes for the screws should be punched with a blunt-faced punch where needed and be afterwards reamed out. Five screws generally answer. The steel should be laid on a piece of hard wood or a block of solder for this purpose.

If the spring is too hard to punch a hole through it, then take out the temper by heating in a stove and cooling by throwing into a bed of ashes. It will be seen that the thickness of the spring, about one-thirty-second of an inch, will be too great to cut the paper clean and sharp, hence, I advise filing down one edge, which is to form the inner edge, before it is attached to the block, finishing with a very fine file. In putting it on the block it is necessary that the ends come close together, they may be allowed to lap a trifle, which can be afterwards filed away. I generally use a pair of plyers and a hammer to partially shape it around the block.

For making square shapes, it is better to obtain thinner steel than the clock springs, for if they are used, the temper of the steel has to be removed.

Special thin steel can be obtained from most dealers in machinist's tools and supplies, while the old worn-out clock springs can be bought for a song from any large clock company.

To cut out the mats, I simply fold up a sheet of paper 8 x 10 in size until it is four layers in thickness, and of the conventional lantern-size pattern, then place it over the steel die; upon the paper I put a piece of mahogany wood with the end grain in contact with the paper, and by light quick taps of the hammer on the wood, the mats are quickly made, and your die is still ready for hundreds more.

The hard wood can be bought from dealers in engravers' and printers' blocks at the corner of Dutch alley and Fulton street. I submit for your inspection two forms as specimens, one oval and the other square, also several sample mats made on this plan. I think you will agree with me, that the process is very simple, and one of great usefulness to the amateur who enjoys the making of lantern slides.

THE ACCURATE MEASUREMENT OF PHOTOGRAPHIC EXPOSURES OF SHORT DURATION.

BY CHARLES TRUSCOTT.

[Read before the Philadelphia Amateur Photographic Club.]

It is becoming the custom to distinguish photographic exposures by the terms *time* and *instantaneous*, as if the so-called instantaneous exposures are made in no time or in such a short interval of time as to be impossible of measurement.

The expression "*Cap-off-and-on*" is also used to designate a short, so-called time exposure, and may be made to mean any exposure from one-fourth to one-half or even two-thirds of a second, according to the deliberation with which the operation is performed.

The word "*time*" is apparently used to indicate an exposure made by hand—by cap or bulb—the duration of which is under the will of the operator, in contra-distinction to the term *instantaneous* which simply conveys the somewhat meagre information that the exposure is made by a mechanical device set in motion by the will of the operator to uncover the lens but closing it automatically.

"*Instantaneous*" is an indefinite term, a somewhat elastic expression, sometimes conveniently used for indicating exposures made by hand, of a quarter of a second or less duration.

It will readily be granted that a mechanically made exposure is capable of repetition with much greater precision than any hand exposure of less than five seconds.

Again, would it not be much more convenient, for the purposes of classification, comparison and discussion, if the mechanical means of exposure were accurately rated, than the custom of having recourse to such slip-shod terms as "*instantaneous*," "*cap-off-and-on*," as a means of conveying definite information.

I do not say such terms should never be used, but that they should be used only in the absence of a more exact terminology. or when definiteness of expression in terms would be out of place or pedantic.

If a photographer were asked what exposure a certain negative had received and how much pyro, etc., was used in its development, and he should answer. "The exposure was instantaneous, and a good dose of pyro was used in development," what ought we to understand? Simply that the exposure had been made by mechanical means, and probably in a duration of time between the one-thousandth and one-fourth of a second, and that four to ten grains of pyro to one ounce of water had been used in making up the developer.

But suppose the answer should be, exposure one-twelfth of a second, diaphragm $\frac{f}{19}$, plate Carbutt's Eclipse, pyro five grains to the ounce, would not the information by its definiteness be more valuable?

If photography be an art science, let those who practice it, no matter whether as a means of livelihood or as a pleasant recreation, aim at scientific precision.

We have instruments for measuring the sensitiveness of plates with more or less exactitude, and it seems equally desirable to be able to determine the rapidity of instantaneous shutters of *exposers* (which is perhaps a better name), so that it may be known how close we dare sail to the wind with a given diaphragm, subject and plate. Instantaneous photography will then cease to be the uncertain and difficult task which many suppose it to be.

A lens exposer which has not been rated may be compared to a rifle without an adjustable sight.

Several methods have been proposed for the purpose of determining the duration of the exposure of mechanical exposers. Some are applicable only to certain forms of exposers. Gravity-drop exposers may be calculated (if we ignore the retarding effect due to friction) in accordance with the known rate of acceleration of falling bodies, but when used with a rubber band or spring it is beyond any known rule of calculation. There are also two tuning-fork methods, one may be called the graphic, and the other the photographic method. The first consists of a tuning-fork of suitable pitch to give a convenient number of vibrations per second. A delicate stylus is attached to one arm of the fork, which is so adjusted as to trace a zigzag line on the moving shutter of the exposer. This method is simple, but obviously not applicable to many exposers, and is, in common with the photographic tuning-fork method, quite inadequate to measure the time of that class of exposers made on the "go and come" or return principle, because at the most important part of the exposure (the amount of rest) it fails to record.

No photograph of an object in motion can be as sharp as the same object at rest. Perceptible or imperceptible, it must be more or less of a blur. Let an object be photographed having a motion of known speed, and the blur in the photograph will be a more or less accurate gauge of the duration of the exposure. A horse going at a certain gait, the fall of a white tennis ball in front of a graduated rod, are instances of inaccurate measurements, because, although the rate of the tennis ball or horse be exactly known, the blur is not all photographed. This method is, therefore, perhaps nearly as accurate as Captain Cuttle's watch, "which, when put back half an hour in the morning, and about another quarter toward the afternoon, was a watch that would do you credit."

You will please remember that the percentage which the movement in the photograph bears to the total movement depends both on the intensity of the light reflected from the object in motion and the blackness of the background. The sensitiveness of the plate and rapidity of the lens are also factors in the question. Take an extreme case. A gray or dark moving object, say a cricket ball, is photographed in a dull light, with a slow plate, a slow lens and a very short exposure: result, no blur, or even trace of the moving object. Now photograph your white tennis ball, falling in bright diffused light, with a landscape lens, and fully one-half of the movement is not photographed, and part of what is photographed is probably fogged out by light reflected from the background. These are points often overlooked, and will tend to make the exposure appear shorter than it is in reality.

Now substitute a solid metal ball, nickel plated and highly polished; let it fall in bright sunlight in front of a black velvet background set back in a dark recess, with lines of white string stretched at measured distances apart across the front of the recess; use a very sensitive plate and a rapid portrait lens, and having a moving image of the sun, your photograph will show the total movement.

When you read of exposures which are said to work in the one-five thousandth part of a second, or less, it will be well to take it (if at all) with the customary grain of salt, and remember Captain Cuttle's watch. But I shall have more to say on the practical limits of rapidity when I take up the subject of Exposer Construction.

Another proposal is to use a pendulum as a moving object. The same objection applies to it as to the falling ball, *i. e.*, the motion is irregular, involving complicated calculation.

The photographic tuning-fork apparatus is much more complicated; in fact you get at the result in a most indirect and roundabout manner. A small mirror takes the place of the stylus on the arm of the tuning-fork, and a heliostat is used in order to keep the sun image on the small mirror, which reflects a vibrating image on to a sensitive film attached to the moving shutter of the exposer to be tested. Having all this, the rate of vibration of the tuning-fork has to be ascertained, because, being weighted, its normal action is interfered with; the heliostat could be dispensed with by using a small convex mirror on the tuning-fork, which would simplify it somewhat, but there are other methods far less elaborate, and applicable to all exposers.

A circular motion has none of these objections, and also helps a rapid lens in giving good definition in every part of its course.

The apparatus I prefer, and have used for over six years, consists of a clock movement by weight (or a coiled spring could perhaps be used); in the latter case it should have a fusee motion. The pendulum is removed, and a mandrel takes the place of the minute hand to receive the revolving disk, which is 18 inches in diameter. It is covered with black velvet, and has a small convex mirror mounted near its margin. The train of wheels connected with the striking part of the clock is with its fan made to do duty as a regulator, then the toothed wheel connecting the hour hand is made to do duty as a tell-tale, so that every seventy-seven revolutions of the disk a click is heard, which is useful in adjusting the weight to produce the right speed; from one revolution in two seconds to three revolutions per second is found to answer all purposes. A measuring plate is made by photographing a graduated circle, and making a transparency therefrom.

It is only necessary to lay it on the negative to be measured. and the distance traversed by the revolving disk during exposure is seen at a glance and measured accurately without any intricate calculations, and is, furthermore, applicable to any exposer whatever. I shall now show some slides to illustrate the apparatus and its work.

AN OLD PHOTOGRAPHIC CLUB.

BY COLEMAN SELLERS, E. D., M. INST. C. E.

(*Continued.*)

After Dr. Holmes had written his paper on "Sun Painting and Sun Sculpture" in "Atlantic Monthly," he says in his "Doings of the Sunbeams" that he then visited, for the first time, the establishment of Mr. E. Anthony. It was there that he met the founder of our club, Mr. Henry T. Anthony, and he must have been impressed as others had been by his kindness and willingness to impart knowledge, for it was that visit that suggested the paper we have already so freely quoted. When the club was formed, its members coming either directly or indirectly in contact with Mr. Anthony, found that through him they had the means of obtaining all the information needed as to the prosecution of the art with the fullest knowledge of the processes then known to the best professional operators.

We have before us an old account-book in which is secured a few letters on paper now yellow with age. Upon one we read under date November 18, 1861, the following :

DEAR SIR :

You are cordially invited to become a member of our Amateur Photographic Exchange Club, according to the general rules enclosed herewith.

Hoping an early and favorable reply, I remain on behalf of the Club,

Yours, respectfully, F. F. THOMPSON,
Secretary.

The names sent me at that date were as follows :

Charles W. Hull, 32 Park row, New York; L. M. Rutherford, corner Second avenue and 11th street, New York; August Wetmore, Jr., 61 Lexington avenue, New York; J. H. Haight and Mr. Masterton, both care E. Anthony, 501 Broadway, New York; H. T. Anthony, 501 Broadway, New York; F. F. Thompson, 2 Wall street, New York; E. L. Cottenet, Dobb's Ferry, New York; George B. Coale, Baltimore, Md. ; Robert Shriver, Cumberland, Md. ; Professor E. Emerson, Troy University, Troy, New York; Professor O. M. Rood, Troy University, Troy, New York; Charles F. Himes, Troy, New York; Constant Guillou, 615 Walnut street, Philadelphia; S. Fisher Corlies, 1177 Arch street, Philadelphia; Professor Fairman Rogers, 202 West Writtenhouse, Philadelphia ; Coleman Sellers, 601 N. 18th street, Philadelphia.

We find that we have added to this list in our own hand, perhaps a few days after, F. T. Fassitt, 1129 Girard street, Philadelphia; E. Borda, Schuylkill County, Pa.

Later, a letter without date is in the book of the club accounts from Mr. H. T. Anthony, acting as Secretary *pro tem*, and directing us to add the names of Henry Bedlow, Newport, R. I.; Titian R. Peale, U. S. Patent Office, Washington, D. C.; Dickerson Sargent, Philadelphia; Frederic Graff, Arch street, Philadelphia, at the present time President of the Philadelphia Photographic Society, was a member, but later. So were many others whose names are in this book as exchanging under the rules, for the club was wisely constituted and was or became elastic, as will be seen.

RULES OF THE AMATEUR PHOTOGRAPHIC EXCHANGE CLUB AS JUST PUBLISHED IN 1861, WERE

1.—None but amateurs in the art shall be recognized as members, and the number shall not exceed twenty.

2.—No member shall forward for exchange any work not his own.

3.—Every member shall forward each other member on or before the 15th of January, March, May, July, September and November, at least one stereoscopic print, a copy of which has not been sent before, or its equivalent mounted and finished.

4.—Every member shall keep a book account with each other member, charging each print sent and crediting all received. Should any members desire to exchange with any others oftener than bi-monthly, they can do so by agreement.

5.—Any one failing to send one print bi-monthly, shall be struck off the book of the party he so fails to send to, unless satisfactory reason is given for his default.

6.—All photographs must be properly labeled with a descriptive name, the name of the artist, and the date of the printing, and they must be guaranteed not to fade for two years; and if toned by experimental process, must be marked "Experiment."

7.—Two unmounted prints shall be equivalent to one mounted and finished of the same size. Two card or quarter plate shall be equivalent to one stereoscopic, and two stereoscopic to one whole plate.

From the year 1861 to 1863 there was great activity in the club. On February 1st of 1863 Mr. F. F. Thompson issued the first number of a modest paper entitled "The Amateur Photographic Print," dedicated to the Amateur Photographic Exchange Club. The prospectus sets forth:

"The 'Amateur Photographic Print' is just what the title indicates. It is issued for the benefit of the members of the club, and for their mutual edification. It is printed and issued by the secretary solely. He sets the type, locks the form and prints the sheet on a private press, in his own photographic 'den.' The publisher being purely an amateur of the laziest kind, the precise day of issue will depend very much on time and pleasure; but he intends to issue the 'Photographic Print' monthly, if not too lazy.

"In fact this is a purely independent sheet. The terms of subscription are of the most liberal kind; filthy lucre being entirely disregarded, and the whole number of the subscribers on the free-list. Only the members of the club will be recognized as having the right to blow up the editor, and they in return for this privilege will be expected to keep the 'Print' alive by frequent contributions. Short articles, written to the point, will have the preference. Short, because our compositor, being a green hand, would be 'stumped' with a long job, and the d—l (we mean the one in our office) can't find room on the press for but a limited amount of matter."

Seven numbers were issued in eight months, each on time, the last on September 1, 1863, on the last page of that last sheet we find that Messrs. H. T. Anthony and C. W. Hull had been drafted, and the wish expressed that "Success may attend their victorious arms."

Then we find that Dr. O. W. Holmes has been obliged to decline the invitation to join the club for want of time, and he is quoted as saying: "I must therefore plead inability to avail myself of the privilege you offer me, and be contented with assuring the club of my interest in its labors, and my wish for its continued prosperity."

I do not understand this, for in my account book of the club I find his name in my list and note the first lot of pictures sent to him was on April 9, 1862, and the first print he sent to me was a fine stereoscopic picture of a large ball of rock crystal from Japan, in and on the surface of which can be seen the reflection of the objects in the room.

In the first number of the "Print" the rules are repeated; this was two years after the foundation of the club, the limit of twenty having been omitted, the list of members was published, and then comprised twenty-three names. Mr. Thompson expected to take a trip of six weeks with dry plates to Portage, N. Y., and said he would not be able to issue another number before December

1st. No other number was ever issued, because he was obliged to march with his regiment to Richmond. And now, in 1888, he tells us that that was the reason for his giving up the publications.

Doubtless there were some members of the club who were quite active, and yet never had the pleasure of meeting the officers in New York. Those who met Mr. Anthony, in particular, were the gainers. He was a genial companion and a kind friend, ever willing to help all who came to him for advice. The club as formed, had its members scattered widely over the country. They in consequence formed smaller local societies of an informal kind, or may be, were more earnest in their correspondence with some members than with others in accordance with personal taste and kindred likes. No history of the club written by one member can therefore be perfect, for like the soldier on a battle-field he can see only the events that occur nearest to him.

One bright summer's day there was an accidental meeting of the members who lived in New York on the occasion of the visit of a non-resident member to the metropolis. It was planned, that there should be a friendly contest between the advocates of wet and dry photography, or as was said then between Siccus and Humidus. The ground chosen was at or near High Bridge, where Croton's water crosses that brackish stream. One member had with him a novel sort of box to enable him to work wet plates without the use of water. This small box contained all that was needed for the flowing and developing of the plates, but the washing was dispensed with and in its place he flowed the developed plate with a mixture of glycerine and water, and then shut the wet plate up in a light tight box to be well washed at home and fixed. He had been able to keep plates in that manner in a moist condition for several years. Mr. Anthony stood by under the shade of a large tree while the first plate was being developed. It was fogged. He then from his pocket full of letters selected a yellow envelope to cover the little yellow glass that admitted light to the box. No more plates were fogged that day. He watched the process and took part in it, trying the working of the developing box and making the day one long lesson in the art. The party had gone to the High Bridge in open wagons through the then new Central Park, where the trees yet small, gave but little shade, but where the eye was never tired of looking at what art had done to add charms to the rudest, wildest nature. We were to dine and spend the evening at Mr. Thompson's residence. It is easy to imagine the house of a man fond of scientific investigation in which work he had the hearty support of his family. It was a merry evening—plenty to talk about on the common ground of the then hobby. There was music and games, and here it was that our Anthony was so strong in his merry way planning the most laughable charrades and carrying them out with the master hand of the artist. It is only bright meetings like this one that remain in mind, after so many years have gone by and some who were there then have gone to their home beyond the grave.

(*To be continued.*)

◆

Dishonest Only Once, but ——.—"I'll tell you what it is, boys," said Squire Petroleum to the two law students who were bending over Blackstone, with a ten-cent novel between them and the legal page: "I'll tell you what it is, if you want to succeed, you must always be honest. Trickery and deceit don't pay. Be truthful and straightforward in all your dealings. I never was dishonest but once in my life, and then I made a hundred thousand dollars by it."

OUR ILLUSTRATION.

The beautiful silver print with which we illustrate this number of the Bulletin is from a negative made upon the Stanley dry plate by the well-known New York photographer, Naegeli. It is an excellect specimen of his work, and an example of clear, clean, photographic manipulation. Mr. Naegeli grows in skill and artistic taste from year to year, and is reaping the reward of patient industry and study. The example of his work that we give is an improvement over that of former years, when he produced pictures that then ranked high in the photographic world.

A NEW SUMMER ANNUAL OF PHOTOGRAPHY.

"THE INTERNATIONAL ANNUAL OF 'ANTHONY'S PHOTOGRAPHIC BULLETIN.'"

The publishers of "Anthony's Photographic Bulletin" have much pleasure in announcing that they intend to issue in July, 1888, a new Photographic annual, which will contain important contributions from the leading photographers of the Old and New Worlds.

In the new annual it is hoped that workers in the two hemispheres will contribute in fairly equal proportions accounts of their apparatus, methods, modes of working, and discoveries. This "international" character of the book will, it is believed, be specially acceptable.

The "International Annual" will be published at midsummer, just when photographers are most in need of help and of the latest information. All its features have been carefully considered. It will contain a number of illustrations of the highest class—English and American; a careful selection of useful tables and formulæ; numerous editorial articles for "advanced workers"; the "First Principles of Photography" for beginners; lists of photographic societies and their officers; a large number of original articles specially written for this book, and several new features which need not yet be specified.

Articles have been received from Sir D. Salomons, Bart.; Sir Howard Grubb, F.R.S.; Professor Piazzi Smyth (Astronomer Royal for Scotland); Capt. W. de W. Abney; G. M. Whipple, B.Sc. (Superintendent Kew Observatory); Chapman Jones, Andrew Pringle, Dr. P. H. Emerson, B. J. Sayce, H. P. Robinson, S. G. B. Wollaston, W. Adcock, George Bankart, C. H. Bothamley, T. C. Hepworth (Editor, *The Camera*); R. Keene, The Hon. J. G. P. Vereker, J. A. Forrest, Clement J. Leaper, Henry Sturmey *The Cyclist*); Greenwood Pim (of Dublin); George Mason (Glasgow); Professor Steggall (Dundee University); T. R. Dallmeyer, J. Traill Taylor (Editor, *British Journal of Photography*), and about one hundred and thirty of the other leading Photographers of the British Isles. In the United States—John Bartlett, Philadelphia; Henry J. Newton, New York; F. C. Beach, New York; Prof. D. L. Elmendorf, New York; Prof. O. N. Rood, Columbia College; Prof. C. F. Chandler, Columbia College; Prof. Coleman Sellers, Stevens Institute; Fred. E. Ives, Philadelphia; John Carbutt, Philadelphia; G. Cramer, St. Louis; Dr. E. L. Wilson, New York; Dr. Piffard, New York; Dr. Maurice N. Miller, Bellevue Hospital, New York; Col. A. C. M. Pennington, Fortress Monroe, Va.; Lieut. H. A. Reed, U. S. Military Academy, West Point; Prof. P. T. Austen, Rutgers College; Dr. L. H. Laudy, Columbia College; Dr. P. H. Dudley, New York; Prof. Spencer B. Newbury, Cornell University. Also Dr. H. W. Vogel, Berlin; Victor Schumann, Leipzig; Prof. J. Husnik, Prague; Prof. W. K. Burton, Tokio, Japan, and many others.

This annual is to fill a place unoccupied by any existing similar publication. The co-operation of one of the ablest photographic workers in Europe has been secured to edit the contributions from the transatlantic contributors, W. Jerome Harrison, F. G. S. a name "familiar in our mouths as household words," from his noted contributions to the literature of our science. On this side of the Atlantic the Annual will be in the hands of Arthur H. Elliott, Ph. D., F.C.S., whose well-known editorial work on the BULLETIN is a sufficient guarantee for a good feast of photographic lore from American contributors. With such a combination of able editors, tried and not found wanting, the success of the enterprise is well assured, and the Annual will be as popular, both here and in Europe, as any similar publication now issued. It will embrace a somewhat different field of interest in photography from any other work; will be issued at a different time, and there is no doubt will command the attention of every earnest photographic worker, both professional and amateur. Neither time nor money will be spared to make the International Annual worthy of the able editors and a credit to the publishers. It will be the same size as the *British Journal Almanac*, and will contain over two hundred original papers covering about five hundred pages of print. The circulation will be 10,000. Every reader of the BULLETIN should subscribe for the new Annual as it will be indispensable for the studio, the dark room and the field. It will be one of those books that are placed in a convenient situation because they are often wanted.

E. & H. T. ANTHONY & Co.

AIR BRUSH PRIZES.

THE Air Brush Manufacturing Company will offer the following prizes at the Convention of the Photographers' Association of America, to be held in Minneapolis in July, 1888:

One complete Air Brush will be given for the best portrait in black and white, finished with the Air Brush.

One complete Air Brush will be given for the best portrait in water colors, finished with the Air Brush.

All work competing for these prizes shall be over prints.

The awards shall be made during the Convention by three judges, who shall be members of the Photographers' Association of America, and who shall be chosen at the time of the Convention.

ANTHONY PRIZES AT MINNEAPOLIS.

IN order to make the coming gathering of photographers particularly interesting and instructive to the users of Anthony's Reliable Bromide Paper, we have decided to offer the following cash prizes:

For the best collection of plain enlargements			$50 00
"	"	Crayons, worked enlargements	50 00
"	"	Pastels, " "	25 00
"	"	Ink or Water colored "	25 00

No collection of plain enlargements need exceed half a dozen.

Worked prints may be limited to two, or may be increased in number as the exhibitor may desire.

What we mean above is a picture finished to look like a crayon, pastel, water-color or ink. We do not care whether the work is produced by the air brush, stump point, thumb or brush. It is the result we are after, the means of production are immaterial.

What we want is *quality not quantity*.

Exhibitors should notify us one month before the date of Convention of their intention to compete, naming the class or classes they will exhibit in, and giving a private mark by which their exhibit will be recognized after the awards by the judges, who will be members of the association. On such notification we will return a circular of directions as to shipment, etc.

All Pictures in competition for the Anthony Prizes must be forwarded to

E. & H. T. Anthony & Co.,
In care of W. H. Potter, Exposition Building,
Minneapolis, Minn.

Each package must contain a card, stating the name and address of the exhibitor, *and his private mark ; but on no account must any other than the private mark appear on the pictures themselves.* Instructions as to class in which they are entered must also be given, and the pictures numbered on the backs to correspond with the number given of the class of entry.

Judgment will be given to the distinguishing mark to us, but the awards will be announced with both mark and name.

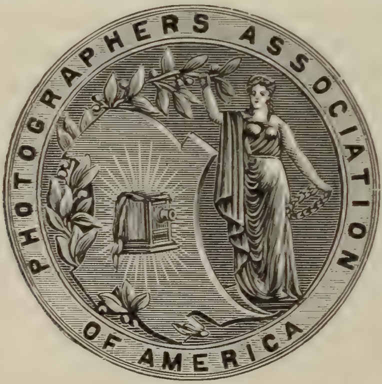
Ship your exhibits in good time, as late arrivals are liable to be overlooked, or, at least, risk the loss of a satisfactory position.

Exhibits must be express paid in every case. Mark the inside of the box cover with your own name and address, so as to prevent mistakes in reshipping.

E. & H. T. Anthony & Co.

1888 MEDALS FOR MINNEAPOLIS CONVENTION.

We give herewith a cut of the design for the new medals to be made for the prize winners at the Minneapolis Convention of the Photographers' Association of America. Our readers should now be hard at work with their exhibits for the Exhibition and competition. As the years roll bye these yearly contests in our art are becoming more and more interesting and worthy of earnest consideration by every photographer.



MINNEAPOLIS CONVENTION.

JULY 10th to 14th, 1888.

RAILROAD INFORMATION.

ALL the passenger associations in the United States have granted the rate of a fare and a third for round trip to our Convention, upon the following conditions:

First.—Each person desiring the excursion rate must purchase a first-class ticket (either limited or unlimited), to the place of meeting, for which he will pay the regular fare; and, upon request, the ticket agent will issue a printed certificate of purchase of the general form, as shown in reduced form below.

Second.—If through tickets cannot be procured at the starting point, parties will purchase to the most convenient point where such through tickets can be obtained, and repurchase through to place of meeting, requesting a certificate from the ticket agent at the point where repurchase is made.

Third.—Tickets for the return journey will be sold by the ticket agents at the place of meeting, at one-third the highest limited fare, only to those holding certificates signed by the ticket agent at point where through ticket to place of meeting was purchased, and countersigned by the secretary or clerk of the association, certifying that the holder has been in regular attendance at the meeting.

Fourth.—It is very important that a certificate be procured, as it will indicate that full fare has been paid for the going journey, and that the purchaser is therefore entitled to the excursion fare returning. It will also determine the route via which the ticket for return journey should be issued.

Fifth.—Tickets for return journey will be furnished only on certificates procured not more than three days before the meeting assembles, and will be available for continuous trips only. No stop-over privileges being allowed on tickets sold at less than full fares. Certificates will not be honored unless presented within three days after the adjournment of the meeting.

Be sure to purchase ticket to Minneapolis and not St. Paul, which is ten miles away. Also see to it in time that your Agent is supplied with Certificates; and if by any mishap none are procurable, fill up and have the agent to sign one like the following:

RECEIVED one First-Class Special Return Ticket

Form.......................No..........

From....................to....................

....

To be filled by Agent and receipted by passenger on delivery of return ticket.

Certificate of Ticket Agent at Starting Point.

THE..... ....R. R. Co.

..............................188

I CERTIFY, That ....

whose name appears on line above, written by himself (or herself), in my presence, has this day purchased one First-Class Ticket Form................No.................

From ....to...................

Via ....

Agent at Starting Point Stamp here.

....

and paid regular fare therefor, $.......

.......................Ticket Agent.

The.......................R. R. Co.

NOTICE.—This Certificate is void if altered, if not presented within prescribed dates, if not signed by the proper officer of the Society or Convention, or if blank spaces on this side are not filled out, signed and stamped by Agent selling the ticket.

Agent at starting point must be particular to place impression of office stamp hereon and to insert in the proper line on this side of this blank, the initials of every road over which the ticket reads, and for such roads as have more than one route, the route must also be designated.

To be filled in by the Agent from whom the through going ticket is purchased at starting point.

Sixth.—Ticket agents will be instructed that the excursion fares will not be available for the return journey, unless the holders of certificates are properly identified, as provided for in the certificate, including the statement of the secretary or clerk that there have been in regular attendance not less than one hundred persons holding receipted certificates of the standard form.

Seventh.—The certificates are not transferable; and the signature affixed at the starting point, compared with the signature to the receipt, will enable the ticket agent to detect any attempted transfer.

VERY IMPORTANT!

Eighth.—You should be particular to notify every person desiring to secure the excursion rate, that the following rule will not be deviated from under any circumstances:

"No refund of fare will be made on any account whatever because of failure of the parties to obtain certificates."

You will observe from this rule that it will be absolutely necessary for each person to obtain a certificate from the agent where the ticket is purchased to the point where the convention is held, otherwise he will be unable to obtain the excursion rate returning, and will be obliged to pay full tariff fare both ways.

Now, while in a general way the above rate is the best procurable (the passenger agents having met, resolved and adjourned), still it is altogether probable that the great majority will be able to secure a rate of one fare for round trip. Make an effort to this end, join your neighbor and get up a competition between agents of different roads; interview the scalper, or buy a thousand-mile ticket with rebate for unused portion.

HOTEL RATES AND LOCATION.

WEST HOTEL, Headquarters.—$2.50 per day, each, two or more in a room. $3 per day, each, two or more in a room, with bath. $3 per day, one in a room. $3.50 per day, one in a room, with bath. Capacity, 1,000 guests.

THE NICOLLET.—Regular rates, $2.50, $3 and $3.50. The photographers, $2.50 straight, best rooms. Capacity, 400.

NATIONAL HOTEL, 205 Washington avenue, South.—$1.50 per day. Capacity, 70 rooms.

THE NEW ST. CHARLES, Corner of First avenue, South and Second streets.—$1.50 per day. Capacity, 40 rooms.

Certificate for Reduced Fare on Return Journey.

VIA THE ....R. R.

Good only if presented by the original purchaser of ticket, duly certified to have paid full first-class tariff rates for Going Passage, as shown on reverse side hereof.

....188

THIS IS TO CERTIFY, That..has been in regular attendance at the..................................and having paid full tariff fare by the route indicated in the Ticket Agent's Certificate on the back hereof, from ....to..................................is entitled to a continuous trip return ticket between the same points at the agreed reduced fare, by the same route, upon presentation of this Certificate, properly signed by the Secretary, and surrender of said Certificate to the Ticket Agent of the initial railroad, at the point where the meeting is held, within THREE days after its adjournment, provided the ticket referred to in this Certificate, was purchased not more than three days prior to the date of the commencement of said meeting. Return tickets must be procured before entering the cars, as full fare will be required otherwise. Ministers and others holding reduced fare permits or commutation tickets of any description are not entitled to this reduction.

☞ The holder of this Certificate must sign the receipt on the back hereof in the presence of the Ticket Agent who issues the return ticket, who will take up this Certificate, and return it to his Company, with his report of sales.

.... Secretary or Clerk

.... Association or Society.

This side to be filled and signed by the Secretary at the meeting.

Pauly House, Opposite Union Depot.—$1.50 per day. Capacity, 50 rooms.

Fisher Hotel, Near Union Depot.—$1.25 per day. Capacity, 90 rooms.

Clark House, Corner Fourth street and Hennepin avenue.—$1.50 per day. Capacity, 50 rooms.

St. James Hotel, Corner Second street and Washington avenue.—$1.75 single; $1.50 double (two in a room). Capacity not given.

Besides innumerable other hostelries the rates of which were so low that we were ashamed to ask a reduction.

W. H. Potter,
Secretary.

CENTRIFUGAL FORCE APPLIED TO EMULSION MAKING.

BY ANDREW PRINGLE.

[Read before Camera Club Conference.]

(*Continued.*)

The requirements for centrifugal separation are, so far as we are concerned, a liquid containing a solid substance or substances not in solution, and an apparatus for causing very rapid revolution. In our case the liquid is water holding in solution nitrates and gelatine; the solid matter not in solution is silver haloid. Now, when liquids contain solid matter not in solution, the solid substances, on centrifugal force being brought to bear, fly outwards from the center of oscillation with a force and velocity proportionate to their density or specific gravity, the denser solids flying outwards more quickly and more strongly than the lighter solids. The substances in solution remain so, and simply fly round with the liquid.

I cannot, for want of time, give more than one example of the power of centrifugal force. If a stick 2 feet long oscillates on its center in a horizontal plane at the rate of 3,000 per minute, and if at each end of the stick there be a bucket containing, say, emulsion, the whole at each end weighing 20 pounds, taking one foot as the mean radius, the centrifugal force at each end of the stick will be nearly 28 tons. We do not use sticks, but "drums," and the mean radius is not often over six inches; but it is easy to see how strongly made the "separating machine" must be.

Having cooked our emulsion, and so made it sensitive, or, in other words, having so brought our silver haloids to a state of coarse division, we place the emulsion in the drum, and cause the drum to rotate at a certain speed for a certain time. As I am addressing amateurs, I will confine my attention to the smallest size of "drum" made, which has a diameter of 4½ inches or thereabout. We can make this rotate about 4,000 times a minute without any very violent exertion; still, on a very hot day one does not wish to repeat the operation many times.

The time and speed required for separation depend on (1) the state of division in which the haloids are. The larger the grain, the quicker the separation. I can make a very close guess at the rapidity of my emulsion, when I examine the drum after separation. (2) The quantity of gelatine present. The more gelatine the longer the separation. (3) The temperature of the emulsion. The higher the temperature the more easily is separation effected, but there are limits of temperature beyond which we should not go.

(*To be continued.*)

According to the Chicago *News* they have a novel method in St. Paul of determining the genuineness of diamonds. A man was offered one at a bargain, and, being a little suspicious that the sparkler was not a genuine diamond, thought he would put it to a test. So he put it on an anvil and struck it a smart blow with a hammer. He has bought it now, for he had to, but he will not wear the pieces.

ANTHONY'S
Photographic Bulletin.
EDITED BY
Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.,
and a corps of practical assistants.

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¼ " " " ... 5.00. ⅛ " " " .. 3.00
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" " twelve issues............... 15 "
" " twenty-four issues......... 25 "

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Remit by Express Money Order, Draft, P. O. Order, or Registered Letter.

Advertisements should reach us not later than the Saturday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, six, twelve or twenty-four issues.

E. & H. T. ANTHONY & CO., Publishers.

CHICAGO LANTERN SLIDE CLUB.

THE April meeting of the club was held at Stevens' Art Gallery Hall and the attendance good.

President NICOL announced that the slides to be shown were from the Photographic Society of Philadelphia—that he felt warranted in saying they were gems—but before this treat he hoped the members would pay attention to a few matters of business which it seemed necessary to bring before them.

The minutes of previous meeting were read and accepted. Two new members were admitted, and the committee's report on the matter of a home for the club was made by Mr. Gould.

It was decided that in order to obtain a full expression from the club, the secretary should mail to each member a circular-letter containing the proposal made to the club and request an answer to the same as to their individual preference, after which the committee could better act for the majority.

The Secretary announced that the committee having in charge the proposed collection of a set of lantern slides illustrative of the City of Chicago, hoped in a short time to send each member a printed list of the views desired, and hoped also to receive the hearty co-operation of all in collecting a set that would be a credit to the club.

The lights were then turned down and the lantern exhibition was given. Doctor Nicol read the titles of the pictures, with now and then a few critical remarks.

On the appearance of the two gems by Mr. Ellerslie Wallace, Jr., entitled The Old Mill, and The Boudoir, in the Garden of Versailles, the Doctor briefly described the process by which they were made.

Of the many slides worthy of mention, Mr. Pancoast's Indian Views; The Tunnell Fire, by Mr. Vaux, Jr.; Old Cronies by Mr. Castle, John G. Bullock, The Raglan; News; by Fassitt; Wayside Chat.

In fact, with hardly an exception, the set furnished a rare treat for the audience, and the Photographic Society of Philadelphia will merit the thanks of the club for the enjoyment of the evening.

The members are looking forward to another pleasant time with the London Camera Club views; also an astronomical evening with views by Professors Hough and Burnham.

These interesting and instructive exhibitions are certainly increasing our membership and are incentives to the amateurs in lantern slide work. W. A. MORSE, *Sec'y.*

PHOTO SECTION OF THE ROCHESTER ACADEMY OF SCIENCE.

A GOOD-SIZE audience attended the meeting of the section, Tuesday evening, 8th inst. The subjects were varied and interesting. G. W. Rafter showed some of his masterpieces in photo-micrography. A number of them were pronounced by President Croughton, "the finest he had ever seen," and he had had the pleasure of examining some made by the most expert in the country.

C. F. Hovey exhibited and explained the working of the Brown & Goldsmith success sensitive paper preservative. E. W. Horne then delivered the lecture of the evening upon "Orthochromatic Photography." After reading a piece explaining the method of making, he stated the difficulties encountered in developing, and showed some negatives made upon ordinary plates and some made upon orthochromatic plates. The difference in the values of the blue and yellow colors were very marked.

The Secretary was instructed to see the librarian of the Reynold's Library regarding the purchase of "Burnet's Art Essays" for the use of the section. A vote of thanks was extended to Mr. Rafter for his kindness, and also to the publishers of "The Science of Photography" for placing the society upon their complimentary list. It was decided to have an outing Decoration Day, and Mr. Croughton has very graciously consented to give a lecture and demonstration in the field upon the choice, composition and lighting of the subjects. He has also agreed to enlighten the members at next meeting, Tuesday evening, May 22d by a demonstration of the process of "Carbon printing," all are invited. Traveling amateurs can obtain information regarding the points of interest and beauty, which Rochester is rich in, from members of the section.

AT the regular meeting, held in the society's room in Reynold's Arcade, the first thing of importance was the semi-annual election of officers. On motion of H. W. Mathews it was decided to postpone the election for six months, the present officers, viz.: G. H. Croughton, President; J. I. Hagreen, Vice-President; and Milton B. Punnet, Secretary, continuing to act. A vote of thanks was extended to the Purchasing Committee of The Reynold's Library for their kindness in placing Burnet's "Art Essays" in the Reference Department of the library on suggestion of the section. There being so few competitors in the "Prize Print Contest" it was decided to postpone it for four weeks. Spring was taken as an additional subject, and C. F. Hovey offered a prize of a book entitled "The History of Photography." Regarding "the outing" of the section it was agreed that the members meet at the Central Depot to take the 8.25 A.M. West Shore train to Palmyra on Decoration Day, where Mr. Croughton will give the section instructions upon the choice and arrangement of the subjects. C. Kerrigan exhibited to the section a fine drop-shutter view of the Lower Genessee Falls, and the Secretary showed some excellent sepia-colored platinotype prints as samples of a style which Messrs. Willis & Clements are about to introduce. Last, but by no means least, was the demonstration of the "carbon" process by G. H. Croughton. Starting with the early history of the process he gave a brief sketch of its "Darwinism" and ended with the development of some prints, an act which was watched with the closest attention and great interest by the audience. The different colored tissue furnished by Allen & Rowell, of Boston, gave fine results in the skillful hands of the President. Taking it all in all, it was one of the most instructive lectures of the season.

James F. Stiles, a New York amateur, favored the section with his presence. Subject for next meeting not announced, but think it will be a general exposure and development of lantern slides by the section.

MILTON B. PUNNETT,
Secretary.

GERMAN PHOTOGRAPHIC SOCIETY OF NEW YORK.

ANTHONY'S BULLETIN:

At a recent meeting at 62 East 4th street, our society elected the following officers for the ensuing year: *President*, A Mildenberger; *Vice-President*, O. Buehler; *Trustees*, A. Baumgarten, H. Fruhwirth, L. Nagel; *Treasurer*, G. E. Pellnitz; *Financial Secr.*, L. Schill; *Secretaries*, A. Esselborn, H. G. Borgfeldt; *Librarians*, L. Burkhardt, L. Schmidt.

Yours respectfully,
H. G. BORGFELDT,
Corresponding Secretary.

ST. LOUIS CAMERA CLUB.

ST. LOUIS, May 1, 1888.

THE regular meeting of the St. Louis Camera Club was called to order by *President* BAIN, with thirteen members present.

The minutes of April 17, 1888, were read, and approved as read.

The *Secretary* read letters from the Philadelphia Amateur Photographers' Club and from the Boston Camera Club, in regard to the Interchange of Lantern Slides.

On recommendation of the Executive Committee, it was decided that the club have a "field day" during the first week in June, and that the club pay the transportation expenses of the members attending.

On motion of Mr. WILCOX, the Secretary was instructed to request the members to state in writing, before the next meeting, on which day of the week they would prefer to have the "field day."

The Executive Committee were made a special committee to secure transportation for the club on the field day.

The paper on the "Trials of a Tyro," which was to have been read by the Rev. William Johnston, was deferred until the next meeting, as the writer was detained by sickness at home.

How to mix ferrous-oxalate developer—was the subject of discussion. Father CHARROPIN suggested that the tendency of protosulphate of iron to oxidize in solution could best be remedied by acidifying the water with c. p. sulphuric acid, before adding the iron, to make the iron solution.

After exhibiting the slides of the London Camera Club, which were greatly enjoyed by the members, the club adjourned, to meet on Tuesday, May 15, 1888, at 8 P. M.

WILLIAM M. BUTLER,
Secretary.

LYNN CAMERA CLUB.

THE adjourned meeting of the Lynn Camera Club was held at its rooms, 347 Union street, Lynn, Mass., May 8, 1888.

The following members were present: W. H. Drew, T. D. Hoyt, S. B, Stuart, Professor Elihu Thomson, F. Mower, E. F. Bacheller, G. H. Breed, S. N. Kent, Hermann Lemp, James Lynch, W. B. Gifford, J. W. Gibboney, J. W. Coates, J. Taylor, G. W. Keene.

The minutes of the last meeting were read and approved.

On ballot J. W. GIBBONEY was elected *Secretary* for the balance of the year.

On ballot F. L. RODGERS was elected Librarian in place of E. F. Bacheller, resigned.

The President then read the following proposed amendment to the By-Laws, it having been posted on the bulletin board one week. "Committee on Finance, three, to consist of the President, Treasurer and Secretary." The Committee on Finance shall with the approval of the Executive Committee make all purchases and contracts in the name of the club, and all orders for merchandise of every description for the use of the club, must be signed by at least two members of the said Committee on Finance.

"Add to Art. V, after Executive Committee and signature of two members of the Finance Committee," as proposed by Mr. E. L. Rodgers and Mr. T. D. Hoyt. On this amendment being put to a vote it was unanimously carried.

Adjourned. J. W. GIBBONEY,
Secretary.

NEW ORLEANS CAMERA CLUB.

FOURTH LANTERN EXHIBITION.

THE fourth exhibition of this club took place May 30th, at Tulane University. A large audience was present, and an interesting collection of the work of the members of the club took place. A pair of lanterns, each giving a fifteen-foot disc, was used to project the slides, and the character of the pictures spoke well for the industry and skill of the members in this interesting branch of photographic manipulation. About two hundred slides were projected. These included Mexican views; scenes on the sugar plantations and turpentine districts; views of lake and river scenery; railroad and regatta and other instantaneous shots. The Mexican views were the work of Mr. Harry Howard, the Treasurer of the club, and called forth much admiration. They were as good as any work of the kind ever shown here.

The large number of slides exhibited took more time than was judicious for a summer session. It would be better to have these exhibitions oftener and show fewer slides.

WILLIAM W. CRANE,
Secretary.

COLUMBUS CAMERA CLUB.

THE regular meeting of the club was called to order at 8.30 P.M., with *President* LINCOLN in the chair and fourteen members present.

The principal business of the meeting was the revision of the Constitution. After considering a new Constitution and By-Laws, article by article, the old Constitution was repealed and a new one unanimously adopted.

The *Secretary* was instructed to purchase a copy of Robert's Rules of Order for the use of the club.

Under the provisions of the new Constitution the club proceeded to the election of the followlowing officers:

Vice-President, Professor N. W. LORD; to fill vacancies on the Executive Committee, Messrs. GEORGE L. GRAHAM and W. H. MILLER.

The House Committee was then instructed to purchase a 15-inch burnisher for the use of the club.

The thanks of the club were extended to Mr. W. H. Walmsley for the presentation of a bromide enlargement, which, very tastefully framed, hung upon the walls of the room and kept company with silver prints of Mr. J. N. Bradford and transferrotype portrait mounted on a porcelain palette by and of Mr. W. H. Miller.

Some thirty views of the Serpent Mound from Peabody's Museum of Archæology were passed around by Mr. Howe for the inspection of the club.

Professor **Lord** made a few remarks on the composition of "Flash Powders" and gave the result of an analysis of a powder which, it is claimed, will not explode by percussion. The ingredients were :

Permanganate of potash	10 parts.
Bichromate "	10 "
Metallic magnesium	8 "

The flash from this powder was quick, bright and violet in color.

A proposition was made to the club to take a canal-boat ride on their annual "outing." The matter was referred to the House Committee for the arrangement of details.

Three applications for membership were laid over to the special meeting of June 3d, as under the provisions of the new Constitution they could not be acted upon at this meeting.

Special meeting of June 3d will be devoted to detective cameras, views and enlargements.

THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

ANNUAL MEETING, APRIL 10, 1888.

The meeting was called to order at 8.15 P. M. *President* **Walker** in the chair.

The *President*—In obedience to the authorization and instructions that were given to me at a former meeting I make this report as to the number of members legally constituting a quorum at regular or special meetings of the society ; being the opinion of a well-known lawyer.

"The law is, that in the absence of any statutory provision to the contrary any number of members—be it small or great—assembled at a regular or special meeting is sufficient for the transaction of business, and the will of the majority of the members present at such meeting is binding upon the society, providing, of course, that the time and place of such meeting is known to all the members, either from the fact that regular meetings are held at stated times and in a definite place, or in the case of special meetings that all the members have been properly notified to attend." *

On motion of Dr. Piffard the report was received and placed on file.

Mr. **Williams**—Mr. *President:* I do not want to make any trouble, but don't that document before us explicitly state that a majority of the members at any properly organized meeting, of which notice had been given, is empowered to take any action they choose ? The application of that is, if that is correct, is that our provision that a two-thirds vote shall be required in certain case is illegal.

The *President*—No, sir. I shall hold that the question as to the two-thirds vote refers to a special matter, and does not refer to a matter as to whether there is a quorum present to transact business. The question is what constitutes a quorum; not what constitutes the requisite number of members to pass any measure before the house.

Mr. **Beach**—As I understand the opinion it is, for instance, if two hundred members should constitute the membership of the society, that if notices were sent to all the members notifying them that a meeting would be held upon a certain designated day, and there were only ten present, that the ten who were present would be competent to pass resolutions and transact any business coming up before the society.

The *President*—They would be perfectly competent. And there might be a further provision in the Constitution which should say that it would require a two-thirds vote to enable certain measures to pass, and in that case it would be two-thirds of those ten that were present.

Dr. **Piffard**—I move you, sir, that Mr. Williams' query as to the two-thirds vote matter be referred to the Board of Directors for a report. I doubt the correctness of the conclusion myself.

Motion carried.

A vote of thanks was extended to the President for the trouble he had been put to in obtaining legal opinion as to what constitutes a quorum.

(*To be continued.*)

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the Bulletin. *Correspondents will please remember this.*

Q.—R. W. writes : Please give me through the Bulletin a good method of bringing out a pure white and black on tintypes.

A.—Use a white background for the subject. On the plate use Anthony's New Negative Collodion and an acid silver bath. In the iron developer use eight drops of pure nitric acid to the pint of solution.

Q.—G. F. B. writes : I send you three prints, one mounted and the other two not.

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* Kent's Com., vol. 2, page 293.
7 Cowen, page 409.

I have been troubled with my prints turning yellow after toning, especially the first that have been toned. There is, as you can see, a yellow deposit on the surface which can be rubbed off, to a certain extent, with alcohol and cloth after burnishing. I make my own gold and use toning bath made with borax and bicarbonate soda and acetate of soda after the general formula.

A.—The trouble with your prints is: First, they have been toned with too strong gold solution because they were printed too fast, that is, in too strong a light. Secondly, and most important, the prints have not been properly washed free from hypo. It is probable that the prints have adhered to one another in the washing tray. They should be very carefully separated from time to time and the water constantly changed. The stains are undoubtedly due to imperfect elimination of the hypo.

Q.—E. W. writes: Will you kindly inform me at once where I can procure a treatise on "Photo-engraving process by swelled gelatine and bichromate potash?" You published an article in the BULLETIN some time within three years.

A.—We do not know just what process you refer to that we published and cannot find the article. If you can give us page and date of BULLETIN we can perhaps help you. In the meantime we recommend you to get Dr. Wilson's new book on photo-etching, etc., noticed in the last number of the BULLETIN, page 318. He gives a number of gelatine processes that may suit your purpose, under the head Callographic Printing.

Views Caught with the Drop Shutter.

MESSRS. HEARN & HARRISON, of Montreal, send us their catalogue, which is full of neat and effective apparatus, the best of which is copied from American designs. A very useful feature of the catalogue is a number of formulas and simple methods of working.

THE Air Brush Mfg. Co., will be represented by an expert at the Convention, and all artists whose brushes are out of order are invited to bring them and have them adjusted without charge.

MR. SAM. C. PARTRIDGE and wife have been to see us several times during their stay in New York. Mr. Partridge is the type of a Western man, bright, earnest, and an interesting gentleman to meet. We have enjoyed his visits and hope they will be repeated in the coming years, and to him may these years be many.

W. D. GATCHEL, of Louisville, Ky., sends us a handsome small quarto catalogue of 168 pages, filled with illustrations of the best apparatus needed by photographers. The volume shows that the men of the Southwest are not behind their more western competitors in the appreciation of good manufactures. The present catalogue is a credit to our enterprising friend and we can commend it to all who need photographic material in that section of the United States.

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ANTHONY'S

Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

JUNE 23, 1888. Vol. XIX.—No. 12.

THE VERGARA FILM.

THE desire among photographers of all classes for a substitute for the glass plate has led to a number of very ingenious inventions to replace the ordinary negative plate with something more portable. As early as 1865, or about that time, the collodion emulsion was spread upon a flexible medium and used as a substitute for glass. We remember very distinctly that many beautiful pictures were made with this material, and at first it seemed as if the glass plate was doomed as a medium for carrying the sensitive surface. But difficulties arose and the expense of the material was so great that its use gradually passed away. Nothing of importance was done in the way of obtaining another substitute for glass until the advent of the gelatino-bromide emulsion, when a new series of efforts were made to replace the cumbersome and fragile glass plate.

In making a substitute, it is necessary that the medium holding the emulsion shall be as easy of manipulation as glass. It is furthermore necessary that the cost of the new material shall be such that it can take the place of the glass plate. In regard to the question of manipulation, almost all the methods proposed hitherto have involved too many additional steps in the treatment of the negative in order to obtain a print. In the process where paper was used as a medium to carry the gelatino-bromide surface, the negative had to be treated with hot castor oil to make it fit for printing, an operation that has proved a very great drawback to the adoption of this method of procedure. Another method that was suggested and is even now used to some extent, is the stripping film; but in this case the additional manipulation necessary to transfer the negative from the support on which it is made to another sheet of flexible gelatine is very troublesome, and detracts considerably from the utility of the process.

Quite recently another improvement in the preparation of substitutes for glass plates has been perfected; this is the Vergara Film. In this case the manipulations are exactly the same, and as simple as in the case of glass. The Vergara Film is a sheet of transparent and insoluble gelatine, which carries the gelatino-bromide emulsion, and appears to be all that can be desired in the ease of manipulation and also in the beauty of the negatives that result. What can be more simple than taking a sheet of gelatine about the fiftieth of an inch thick,

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placing it in the plate-holder on a thin piece of wood made for the purpose, exposing just the same as you would a glass plate, and then proceeding to develop and fix it in precisely the same manner? Yet such is the method of procedure with the new Vergara Film. It has often occurred to us that this was the only correct method of obtaining the most desirable substitute for glass, and we contemplated making experiments in this direction; but a multitude of other duties kept us from our desire. We are glad that the inventor, Mr. Froedman, has succeeded so well, and feel sure that these new films are the best thing of the kind yet devised to take the place of glass.

The sensitiveness of the film will, of course, depend upon the emulsion spread upon its surface just as much as in the case of a glass plate. In developing care should be taken that the developing and fixing baths are cold (not over 70 degrees F), and that the wash-water is also cold; at the same time too low a temperature retards development and makes the film curl. After exposure the film should be placed in a dish with the film side up and water poured over it, allowing it to soak about two minutes. The water is now drained off and the developer flowed over the film in the dish. The developer given by the makers of the film is made as follows:

Hydroquinone..............	$\frac{1}{8}$	ounce	Carbonate of soda....................	$1\frac{1}{2}$	ounces
Metabisulphite of potash.....	$\frac{1}{2}$	"	Or potash..................	$1\frac{1}{2}$	"
Distilled water to make......	8	ounces	Distilled water to make..............	24	"

Mix 1 part of this to 3 parts of this.

But any good developer works well, especially the pyro and potash developer, with sulphite of soda. It is found in practice that the metabisulphite recommended by the makers of the film is not only unnecessary but is in some cases injurious; sulphite of soda with the hydroquinone works much better. The development takes place very much the same as in the case of a glass plate and is controlled in the same way. The fixing bath should be twenty-five per cent. (1 in 4) and the film is best washed, at first both from developer and fixing solution, by laying on a glass plate and turning it over from time to time; finally it may be placed in water without the glass and the water changed five or six times to complete the washing. Remember that imperfect washing will always give negatives that turn yellow and this is as true for the films as for glass plates.

In the matter of drying we cannot do better than give the method of Mr. F. C. Beach, which works admirably:

"Removing the limp and leather-like negative from the wash-water, slightly draining, put it in a tray, pour over it an ounce, or less, of common alcohol, and let it soak for fifteen minutes. Before the end of that time you will notice that the film becomes quite rigid. After soaking in alcohol place the film between two sheets of clean blotting-paper, and bend them around a paper cylinder, such as is used for mailing purposes, not less than three inches in diameter, so that the coated side of the film will be outward, and clamp the paper to the cylinder by two or three elastic bands. If the film is removed from the alcohol before the time specified, it will stick in places to the blotting-paper.

If kept in a draft of warm, dry air from five to fifteen minutes, the film will become perfectly hard and dry, retaining, of course, the curve of the cylinder; but when put in a printing frame under pressure it is made quite flat, and as smooth and even as a glass plate."

Positives with ferrous oxalate can also be made with these films and are very beautiful productions. In fact this new film is a most perfect substitute for glass, and after a very little practice the manipulations can be mastered by the tyro in photography.

The great advantages of it are, its extreme lightness, and the simplicity of the method of using.

EDITORIAL NOTES.

Mr. Francisco Valiente, of San José, Costa Rica, sends us a most remarkable photograph. It is a print from a negative of a solar halo that occurred in his city on May 1st of this year. The outer diameter of the halo on the print is about eighteen times the diameter of the sun's disk, which occupies the center; the width of the halo is about three-fourths of the sun's diameter. In writing of this remarkable phenomenon, Mr. Valiente says it lasted from 10 A.M. to 1 P.M., and noted further, "I took the picture at 12.20 noon, with two seconds exposure, with the smallest diaphragm, using a Stanley plate and a ruby and orange glass over the front of the lens." * * * "The white circle was composed of three principal colors, blue, red and yellow; the blue very broad, the secondary colors almost imperceptible." Mr. Valiente has been exhibiting these pictures in Costa Rica, and they have attracted great attention. It is certainly one of the most remarkable halos we have ever seen. It has a most wonderful appearance in the print before us, and we shall preserve it among the most interesting pictures of our collection.

The Trustees of Columbia College have decided to open a Summer School of Photography in connection with the School of Mines. The course will consist of lectures by Dr. L. H. Laudy, and also practical demonstrations in the studio and field under his supervision. He will be assisted by a practical photographer, and the instruction will embrace a thorough study of theoretical and practical photography. The Museum of Applied Chemistry of the School of Mines contains a very complete set of both ancient and modern photographic apparatus, which will be useful in the study of the art. The library of the college will also be an important adjunct to the system of instruction. We believe this to be one of the best opportunities yet presented to those who desire systematic instruction in photography. Those who are interested in this new effort to advance our art should apply to the Registrar of the School of Mines, Columbia College, for further particulars. The school began operations on June 15th.

In a recent letter from Japan we hear that a dry-plate factory has been started at Yokohama. This is probably due to the influence of Prof. W. K. Burton, whose well-known interest in all photographic work is always a stimulant to those around him. The Japan Dry Plate Company is now doing a good business, the demand being for slow plates at present.

The Albany Camera Club had a grand outing on Decoration Day, when they visited Howe's Cave and the vicinity. The various pretty views were all captured, including apple orchards in blossom, and flash pictures of the interior of the cave. We hope to hear more of these enterprising knights of the camera, a trip on July 4th being in contemplation.

Mr. Fred. E. Ives, the indefatigable worker on orthochromatic photography, sends us a proof from some of his latest experiments. In one of these pictures of the spectrum using cyanine, by his method he has succeeded in photographing from H in the violet to B in the red, an achievement we have never seen accomplished so perfectly before. He has our sincere congratulations on his success.

From L. Palenski, of Alma, Kansas, we have received two capital composition pictures. One represents in a little boy "A Young Artist" earnestly at work before his easel. The other picture shows him explaining to his companion the merits of the work he is engaged upon. Both pictures are capitally done. We shall be glad to receive a paper from our good friend, but it is now too late for the Annual.

We take much pleasure in announcing that Mr. Edwin Campbell, the proprietor of the Bay View House, at Cornwall-on-the-Hudson, has fitted up a dark room in his hotel, which is free to guests of the house. Those of our readers who wander up the Hudson should remember this fact.

◆

AN OLD PHOTOGRAPHIC CLUB.

BY COLEMAN SELLERS, E. D., M. INST. C. E.

(*Continued.*)

Philadelphia has been called the city of homes. It is a city in which there are no apartment houses as they exist in most other large cities. Among those many homes there were at that time and still exist a few that are recognized by their oddity. These few houses are built of red bricks; they have white marble door-steps. There is a red brick pavement in front, which with the white steps has frequent washings. White shutters close the windows at night. In one of these peculiar houses on Arch street lives yet a member of the old club, as he there lived in the year 1861. The number of the house, 1717, is easy to remember. Some house numbers are more easily recalled than others. Once a friend said to us: "Come see me, I live at 150 Race street, remember, dollar and half Race street." Then the house we were born in, 231, happens to be the cubic inches in a gallon, so we have but to think of the gallon to recall the house and to remember the number of the house when we would recall the number of cubic inches in the gallon. Mr. S. Fisher Corlies lives in 1717, and his house has always been the favorite meeting place when strangers, interested in the art or the members of the club, came to Philadelphia. In the upper part of his house, covering the whole area, is a billiard room, at one end of which is a sky-light with northern exposure, as perfect in its fittings as in any gallery of the art. His dark room is large and comfortable. When the Photographic Society of Philadelphia was being founded and when the venerable Constant Guillou was named as President, Corlies, was made Treasurer, for, as Fassitt said, as only he can say such things, "Oh! yes, make Corlies Treasurer, for he has got a safe in his back parlor, don't you know." He was made Treasurer, and he is so to-day. It is true that he would be the right man to fill any high office, but when the right man is in the right place it is well to keep him there. Mr. Corlies, Mr. Fassitt and some few others have been constant in their devotion to photography, and they have worked through all the processes that have from time to time come into vogue. They are still taking pictures which show the master hand just as does this charming one of the aquatic birds on the lake in the Zoo that Mr. Corlies has just sent to us. He and Mr. Graff being active members of the Zoological Society. Mr. Fassitt the other day too, was there, taking the portrait of the old white cockatoo which has talked to the goodly citizens of Philadelphia for over eighty years and considers itself young as yet calling to its friends to "come along," "how are you" and "good-bye" when he recognizes them and wants to be carried around and talked to. The fine picture of this bird as given to us on a white porcelain tile is in memory, of the club days inscribed: "An old friend from an old friend to an old friend."

Those members of the old club who have never, even for a time, lost their interest in the art, have now become fastidious as to what they consider worth photographing. The desire to make many pictures has long since departed and they now work with reason and for a purpose. Some portion of their time is given to the investigation of the science of the art and some given to careful retouching and method of making pictures other than the regular silver prints. They must try the new processes and they often add to the knowledge of the world by the results or their careful experiments. The term members of the club, in the mind of the writer, includes may who never heard of the organization, but who, exchanging with one or the other member of the club have come to be considered in the light of belonging to the old organization. Thus in looking over one old account-book of exchanges, we can find nothing to distinguish those whose name is in the list of members as published from time to time and those who have sent pictures and had others in return, who have written many pleasant letters and given much useful information.

The camera in the hands of such men as Professors Rood and Himes and many others is one among many instruments of research; they do not use it merely for the purpose of making pictures. Mr. Rutherford, while a member of the club, was mapping the sky and marking the stars on the plates. He gave us such pictures of the moon as had never before been produced. He made instruments of precision to enable him to engrave fine lines on glass to be used in his study of the spectra. We do not remember having seen any photographic pictures, portraits or views taken by the late Dr. Draper or his talented father, though, doubtless, they took many, yet it was the latter, who showed that the spectrum would act on a sensitive plate far below the ultra red rays, provided the plate was prepared for the purpose, as he also explained many phenomena of light of interest to photographers. After the sudden death of Professor Henry Draper his talented widow is advancing the work he had in hand at the time of his death, and there is being given to the world as the Draper Memorial the spectra of the stars as such photographs have never before been seen. The stars so small in the distance from us as to be but points, without length or breadth, of themselves incapable of enlargement by the most powerful telescope, have now been made to yield broad spectral bands as wide as can be desired, in which bands the absorption lines are as well defined as the Flonhoffer lines in the solar spectrum. In the hands of the learned, the camera is bringing to us the stars, it is seeking in conjunction with the electric light to map the bottom of the deep seas, and in thousands of ways is ministering to the mental wants of mankind.

Some members of the club exchanged with their fellow-members without much letter writing, while others, full of enthusiasm, wrote long and interesting letters and even went farther, sending sketches in pencil or color, and at times manuscript copies of their own music. Mr. Robert Shriver in 1861 was bookkeeper in his father's bank in Cumberland, Maryland; now he is the President of the First National Bank of the same city. It is said one can, if he knows how, read character by the chirography of the writer. Shriver's letters look like copper-plate engraving, while the title pages of his sheets of music are wonderful specimens of penmanship. All this denotes care—painstaking care is needed in photography. We can find no picture sent to us by him that does not show the same care. He used to tell in his merry way how his younger brothers and sisters would meet him on his way home with "hurry, Bob, there are letters and pictures at home from New York or Philadelphia." So it will be seen that Mr. Anthony's idea was bringing pleasure to many. Mr. Shriver's home was close to Mason and Dixon's line during the war of rebellion. Many times the war notes sounded near that home. It was in 1863 that he wrote "times hereabouts in the middle of June were very exciting. We didn't skedaddle, although strongly tempted to do so, but remained and were captured along with Cumberland and the spunky ones who stood by their homes.

"When the rebs left they did not take me, so I am here yet. You can tell my friends of the club" (this was to Mr. Thompson,) "that I am around, and will be pleased to hear from any or all if so disposed." In writing to the "Print," he said in regard to care: "The best prints come only from him who makes the best negatives. This is the corner-stone of photography, and the man who so works will succeed, and not until he does so do."

It is no uncommon thing for such organizations to become mutual admiration societies. This was not the case with the Exchange Club, it having been formed from the best amateur photographers that Mr. Anthony with his means of judging could select; we all remember the fight between Siccus and Humidus; between the advocates of dry and the sticklers for wet collodion.

As for instance from the "Print" we take at hazard the following, omitting the name of the member referred to: "We have found a fossil. Here is work for the missionaries. Siccus! where are you? Read this from a letter from ——— speaking of dry plates: 'I am their sworn enemy. With the receipt of every tannin picture from the club, my hate increases; it is the bane of true artistic photography, and like the Main law and other dry things, destined soon to disappear.'

"Here's a jolly go! Such pictures as Anthony's 'View from the End of Central Park,' Hull's 'Old Mill at Croton,' Seller's 'No. 6 of the Professor's Visit,' Peales' 'Treasury Extension,' Shriver's 'On the Potomac,'—(the writer has this last enlarged in oil,)—and dozens of others of like beauty, are hateful to Mr. ———. Joking aside, Mr. ——— takes far-famed pictures of animal life, and cannot use dry plates on that kind of work, hence his strong language. Hereafter we will only send him prints from our wet plate negatives, as we have hundreds in box which will last one bi-monthly until conversion, and later."

The old injustice saying, "because a thing has not yet become common it can never be done." Where is the amateur wet plate photographer for animal and outdour work in this the year of grace, one thousand, eight hundred and eighty-eight?

Mr. Anthony lived to see the beginning of the new life in photography; yes, he lived to help in the development of modern dry plate photography.

In 1863 the members of the club were advised to pay no attention to the advertisement of a new process in printing sold for three dollars, by a leading photographer in New York. They were told that the information offered for the sum named was nothing more or less than the fuming process, as it is still called. The submitting the silvered albumen paper before printing to the fumes of ammonia in a box adapted to the purpose, and termed the fuming-box, which at that time had been in use nearly two years by the club. It may be that the process was independently proposed by several persons, among whom Mr. Henry T. Anthony was certainly one; and it is claimed that he was the one who had given the process to the advertiser in that case. In Volume V of the "American Journal of Photography" for 1862, much information can be had as to the discovery of this process, and on page 42 one member of the club says: "Mr. Anthony, amongst numerous valuable hints which has freely and generously been given to me, states that some years ago he had submitted a dry plate to the action of ammonia, and obtained with it a good negative with very short exposure." It is interesting now in looking over the dispute as to priority to find such difference of opinions as to the utility of fuming the silvered albumen paper, while the fuming of plates has been forgotten. Prof. Chas. F. Himes very aptly hits the condition of the art in the early part of the sixties. Those were the heroic days of photography. Most processes were in the experimental stage; very little material was in the market ready prepared; everything in the way of apparatus crude and imperfect. We worked for what we got, and worked harder testing and perfecting processes than for pictures. We can scarcely realize to-day the gantlet of possible failures that a perfect negative had to run then. How the nitrate bath—blameless enough in the laboratory, but a very uncertain factor in the field—was made the scapegoat for failures of great diversity. He regards the wet process as still the best introduction to practical photography, and requires all his students to practice with it first. Some student put on his history of his practice in the laboratory the motto, "It looks easy, try it."

Professor Himes, now for a long time connected with Dickinson College, Carlisle, may be considered as one who has from his early connection with Anthony's club, carried his enthusiastic interest in photography down to the present time and been much more than an amateur photographer.

He went to Troy as tutor but was soon elected professor of mathematics; he was, however, quite an enthusiast, and for the times, successful amateur before he went to Troy, before the formation of the club. An attempt had been made by Joseph M. Wilson, now President of the Franklin Institute, and Professor Himes, to found the Pennsylvania Photographic Society, but they did not know any other amateurs, so it failed for want of membrs enough to fill the offices they had provided for in the constitution. Whilst at Troy he published a method for the "Preservation of the Alkaline Gold Toning-bath," a very simple matter now, but then, especially to an amateur, the apparent waste of gold seemed an item. Davanne & Girard translated it almost entire into their "Researches on Photographic Printing," accompanied by a foot-note giving Regnault's indorsement and additions. In a paper on the "Convergency of the Optic Axes in Binocular Vision," he called attention especially to the possibility of binocular combination with divergence of the axes. In 1864–65, whilst working in the laboratory, and attending lectures on chemistry and physics at the University at Giessen, Germany, was a frequent contributor to the *British Journal of Photography* and *Photographic Achievements*, and published a method for the "Preparation of Dry-plates in Daylight, and Field Photography Without a Silver Bath." The latter promised well, but the successful emulsification of bromide of silver and collodion about the same time superseded it. Upon the assumption of the chair of chemistry in Dickinson College in 1865, a laboratory course was made elective with Latin and Greek in the last two years, a great innovation at the time in a college course, and practical photography was made a part of the course. In 1868 he wrote "Leaf-prints; or, Glimpses at Photography," an excellent hand-book of silver-printing, with additional historical and educational matter and processes, a large edition of which was soon sold, and which has long since been out of print.

In 1869 Professor Himes was one of the party organized by Professor Morton, under the United States Government, to observe the total eclipse of the sun, and wrote the report of the section stationed at Ottumwa, Iowa, and Professor Morton in his report speaks in the highest terms of his efficiency and coolness in preserving the records of this section.

In 1879 published a history of Dickinson College, more particularly of its scientific department; an elegant little volume, illustrated by photographs taken in the laboratory, and which possesses a great general interest as a contribution to the history of scientific education in this country.

During a visit to Europe in 1883, he took the camera into the Zermatt region in Switzerland, and obtained a series of interesting views, and contributed an account to the "Philadelphia Photographer." Also made successful negatives on return on shipboard.

In the summer of 1884 suggested and conducted a summer school of amateur photography at Mount Lake Park on the Alleghanies. The detailed plan for this school, with its courses of practice, might serve as a model for similar enterprises. It was wonderfully successful in all respects, and demonstrated the availability of photography for rational summer recreation. In the fall of the same year delivered a lecture in the course, at the International Electrical Exhibition on Actinism, at the request of the Franklin Institute, in which marked attention was called to ortho-chromatic photography.

In 1887 lectured before the Franklin Institute on "The Stereoscope and Its Applications," including a "Discussion of the Phenomenon of the Horizontal Moon," previously read before the New York Academy of Sciences.

Besides the contributions to photographic literature, has contributed papers and addresses on educational and scientific subjects, and has edited several laboratory hand-books.

For seven years was collaborator with Professor Baird, late of the Smithsonian Institution, in the preparation of the "Annual Record of Science and Industry," and other scientific publications, and at present is on the staff of the Franklin Institute *Journal* for photographic notes.

Upon the completion of the new scientific building at Dickinson, in 1885, which he was mainly instrumental in having erected, in the division of the chairs, he assumed the chair of physics, which he now holds, as patriarch of the faculty in service, though not in years. It is almost needless to add that photographic practice has its place in the course in the physical laboratory, beginning with the old wet collodion process.

It was from Mr. Henry T. Anthony that Professor Himes obtained very valuable aid in the beginning of his photographic work. We have dwelt on the incidents of his life for the reason that from the beginning he has applied the art to education, and has not only been a picture-maker, but is a fit illustration of how photography can be used to aid education, he making it an important part of his system.

(*To be continued.*)

SMOKING PHOTOGRAPHERS.

For some time past the London Camera Club has given at regular intervals "Smoking Concerts." The Society of Amateur Photographers of New York thought the idea a good one, and on Thursday evening, June 7th, had its first smoking concert, many of the members of the society and their friends being present. The performers were Mr. Charles W. Rohrhand, violinist; Mr. James H. Stebbins, Jr., pianist; and the following gentlemen of the Seventh Regiment Glee Club: Messrs. Charles H. Hoyt, conductor; I. W. Love, John Miller, M. I. Fox, C. A. Darling, W. Preston, H. H. Arthur, J. B. Hibbard and A. E. Hoyt. The concert was informal, there being no regular programme; the following music was given:

Selections from "Songs without Words," . . *Mendelssohn.*
Mr. James H. Stebbins, Jr.
"The Jolly Old Crow," . . . . . *Decker.*
"Spin, Spin,"—a Swedish song . . . . . *Jungst.*
The Seventh Regiment Glee Club.
"Ave Maria," . . . . *Bach-Gounod.*
Mr. C. W. Rohrhand.
The Pilgrims chorus from "I Lombardi," . . . *Verdi.*
The Seventh Regiment Glee Club.
Overture, ... *Suppe.*
Mr. James H. Stebbins, Jr.
"Simple Simon," . . . . . . *Macy.*
The Seventh Regiment Glee Club.
Nocturne, ... *Chopin.*
Mr. C. W. Rohrhand.
Solo . . . . ———
Mr. W. Preston.
"Rosa Lee," . . . . ———
Mr. C. A. Darling.
Duet: "Flow Gently, Diva," . . . . . ———
Messrs. Charles H. and A. E. Hoyt.
"The Old Brigade," . . . . . . *O. Barri.*
Solo by Mr. I. W. Love.
The Seventh Regiment Glee Club.

The Lantern Slide Committee, during the evening, threw upon the screen some slides by members of the society, and a series of views of Paris, the property of Mr. Frank F. Cobb.

The audience enjoyed the concert exceedingly, and the efforts of the performers were heartily applauded. Mr. C. W. Canfield, the President of the society, informed the audience that in the upper rooms some things were waiting to be disposed of, including a quantity of Developer No. 4, Yuengling's formula. Before the concert was over Mr. Canfield thanked the performers, and said the society would be happy to give a lantern slide exhibition (Mr. T. T. Eckert having kindly offered the use of his costly lantern) whenever the Glee Club desired. Mr. Hoyt thanked him, and said the Glee Club had enjoyed the evening as much as those present. After this, smoking concerts will be given often at the the society's rooms.

AM.

[*From Photographisches Wochenblatt.*]

WORKING UP SILVER RESIDUES FROM FIXING SOLUTIONS.

BY F. STOLZE.

ON several occasions I have already expressed in the *Wochenblatt* my opinion about the question so important to every practical photographer, the utilization of silver residues; to the effect that upon the whole it is most advantageous to work all into sulphide of silver and to convert this into nitrate of silver. In working a larger quantity of residue lately, according to this principle, some ideas have come to my mind, which make it appear desirable to describe the whole proceeding of the process to avoid failures, and to be sure of the largest possible product.

To precipitate the silver most completely from the fixing solution, the latter should be saturated as much as possible. With weak solutions containing little silver it is comparatively much more difficult and tiresome to obtain all the silver, it being not so easy to find the critical moment at which to discontinue the addition of the precipitant, and the very finely distributed sulphide of silver precipitates only very slowly and is very difficult to wash out. For this reason it is advisable to bring the old fixing baths near to saturation by adding all unfixed paper cuttings, spoiled but unfixed gelatine plates, freshly precipitated chloride and bromide of silver (in a still moist condition) etc., in which the soluble parts will soon dissolve, and the worthless matter is removed. For those, of course, who sell the collected chloride and bromide of silver or its equivalent, this method offers no advantage; they will obtain instead sulphide of silver, for which such a good price is seldom paid by the buyers of residue.

It is different when the sulphide of silver is to be worked directly into nitrate of silver—it is much easier to separate than chloride or bromide of silver, and can be changed with less trouble into nitrate of silver. I will therefore confine myself exclusively to the working of argentic fixing solutions, and add only a few other manipulations closely connected with this method.

The silver is generally separated from solutions of hypo-sulphite of soda in two ways, namely, either by muriatic acid as chloride of silver contaminated with sulphur, or by sulphuret of potassium as sulphide of silver. Of these two processes, the latter is doubtless the most rational. By treating with muriatic acid, the proceeding is the following: the acid added to the solution forms with an equivalent of soda, first, chloride of sodium, and hypo-sulphurous acid becomes free, which cannot exist in a free state, but will decompose quickly into sulphurous acid and sulphur, of which the former escapes, and the latter will precipitate. If the solution, before adding the acid, was saturated with silver, that is, if besides chloride and bromide of sodium it contained hypo-sulphite of silver, silver salts will precipitate, the more the hypo-sulphite of soda, being the dissolving medium of the silver salts, is decomposed, or the latter part of the same is only separated, after all the hypo-sulphite of soda has been destroyed. Besides this, there is another part of muriatic acid needed to change the sulphide of silver into chloride of silver.

As will be seen, a separation of the silver with incomplete saturation will only take place, where so much hypo-sulphite of soda has been decomposed that the now remaining solution of the same is saturated with silver. If direct chloride of silver should actually form in the first moment at the places where the acid is poured in, it will always be dissolved again, when shaken. But the proceeding is herewith by no means sufficiently explained. A chloride of sodium solution is, as is well known, a dissolving medium of the chloride of silver, and as a chloride of sodium solution is formed at the end by the method, the consequence is, that a part of the chloride of silver remains in the mother-lye, and is thrown away with the same. The muriatic acid method has, therefore, the disadvantage that all hypo-sulphite of soda has to be destroyed thereby, without the precipitation of chloride of silver being a complete one.

By application of sulphuret of potassium this is different—that is, with sulphide of potassium and hypo-sulphite of potassium and other compounds—in the form of tri-sulphide to penta-sulphide of potassium as usually present, and particularly in the latter case, mixed with a little undissolved sulphur. A clear solution of the liver-brown mass, added to an argentic fixing solution, produces at once a precipitate of sulphide of silver, the sulphide of potassium and the hypo-sulphite of silver changing in a manner, that sulphide of silver and hypo-sulphite of potassium are formed, while the superfluous sulphur contained in the sulphuret of potassium, mostly two equivalents of sulphur, is separated; good sulphuret of potassium containing mostly only tri-sulphide of potassium, gives generally a precipitate which consists of $Ag_2 S., + 2 S.$, that is, that 100 parts of the same contain 31 parts sulphur and 69 parts silver. Provided no sulphur escaped in precipitating, one would have a sulphide of silver containing 87 per cent. of silver.

With the precipitation of the sulphide of silver one should proceed only gradually; it is best to keep back part of the fixing solution—about a tenth of the whole quantity—and to add to the main quantity sulphuret of potassium, as long as precipitation of sulphide of silver takes place and until the smell of hydro-sulphuric acid does not disappear any more during stirring.

The chemist has still other marks of recognition: as soon as there is a superfluous quantity of sulphuret of potassium it will act as a solvent upon the sulphide of silver, and the mother-liquor, in which the precipitate is in flakes, becomes milky. Of the tenth part, which was kept back, one adds now as much to the main quantity, that the smell and milky coloration have disappeared again. The sulphide of silver which formed is left to deposit, after which the liquid part is carefully poured off; the sediment is then washed several times, and will, after drying, and as above said, contain about 69 per cent. of silver. The mother-liquor which was poured off, is not thrown away. What has taken place in the same? Hypo-sulphite of potassium has taken the place of hypo-sulphite of silver, and aside from immaterial contaminations with chloride of sodium, etc., the liquid has regained its original fixing power.

It may therefore serve again for the solution of chloride and bromide of silver, and after this principle I, for instance, always work again with the same fixing solution all the cuttings and waste from my factory. The liquid, will of course, become of darker color in the course of time, but it does not lose hereby its fixing strength. For this method there is therefore only needed a quantity of sulphuret of potassium, equivalent to the quantity of silver, the restored fixing solution being preserved.

Having thus come into possession of a pretty pure mixture of sulphide of silver and sulphur, it is best to work the same in the still moist condition.

(*To be continued.*)

THE BORROWED CAMERA.

BY MARY SCOTT BOYD.

Of course they wanted a camera. "Everybody has one now," said Susy, and her elder sister remarked that "nothing was easier than photography; that it was not necessary to have any instruction; that a friend of hers had taken as creditable pictures as any photographer, and without a single lesson."

The question was, where to get the camera? A neat little $20 equipment had been advertised, and the girls thought quite seriously of making a common purse, and buying the machine.

The long shadows of October seemed so favorable for photography, and a thousand or more possible subjects suggested themselves. Susy had a vision of posing herself, quite frequently; it would be lovely to have pictures of all her summer dresses. Ruth, who, with her old-fashioned name, inherited a fondness for antiques, and for objects of historical interest, immediately planned for pictures of the famous "Washington's Headquarters," within a few miles of their home, and of the quaint articles found within its walls. Then, too, their own pretty home, "The Cedars," must be taken from every point of view, and Laddie, the lively skye-terrier, the *bete noir* of all the large dogs of the neighborhood, and the joy of the family, must have his saucy face immortalized.

The girls had gotten quite into the habit of speaking of "our camera," forgetting that it was only, as yet, accorded a place in the very shaky air-castles, which they built with daily regularity.

At last, one morning, a call from the expressman electrified them all. Laddie barked with even more than customary ardor, stupid little fellow, trying to drive away the man who was bringing such a boon into the Lloyd household.

For what could be more delightful than the letter which accompanied the irregular parcel marked for the "Misses Lloyd." Mrs. Martin, their school friend, who had been summering and simmering at Westfield, and had enjoyed her camera so much, now that she was back in town, sent it to Ruth and Susy, to use until the next June. "I do not give you the entire outfit," she wrote; the chemicals, etc., are hard to transport, and you had better take your plates to be developed by some photographer, the expense is trifling. A sad mistake this, but she wrote in good faith. "Write for a book of directions; I have lost mine; then, with my blessing, go to work, and send me your first picture. P. S.—Do not try portraiture; this last a solemn warning; there is only a view lens, and you will find yourself 'left'—excuse the slang—if you essay to do anything with humanity. Perhaps a group in the open air would not be a failure."

Susy's heart fell at these words; where were the pictures of her pretty gowns? Ruth was not timid; she said, "never mind Sue, we will try portraiture anyway, and we will begin immediately." Susy was reassured, but suggested, as the rain was then falling, that a delay until the sun shone might be wise. Meantime they had torn off the numberless wrappings, and there before them, lifted from their canvass cases, were a pretty polished mahogany camera, and a tripod of the same wood with bright brass mountings. There were buttons on each leg which screwed and unscrewed, shortening and lengthening them at will. All was very neat, and suggestive of pleasure and usefulness. Five holders for 4 x 5 plates, a small lantern with ruby light, a box, half full of Stanley plates, and a square yard of black rubber cloth completed the outfit.

The day after its arrival the sun shone brilliantly, and the two girls started out on their first photographic expedition. Some half a dozen dogs accompanied them, and ranged about and quarreled at the very legs of the tripod—to the extreme hazard of the machine.

The dust lay inches deep upon the avenue near by—but it did not deter those tyros from kneeling down upon it and gravely commencing the focusing of their own dear home. It was imperative that only one should stifle at a time under the black rubber cloth, for eyes and ears were closed to outside life—all interest centered upon the gable end of the house, and consequently one photographer stood sentinel to guard against the sudden approach of vehicles—for to have camera and artists demolished by some prancing steed would have been an unlucky beginning and sudden ending all in one.

Twenty minutes or more were consumed by this operation of focusing, Susy and Ruth doing alternate duty under the cloth and on guard; at last everything was ready for the final move. "You take out the slide," whispered Susy, hoarsely, and while Ruth obeyed, Susy reached forth trembling fingers and removed the morocco cap. One, two, three, four, five, were counted in solemn sepulchral tones—on went the cap—in went the slide—"never were folks so glad."

A great sigh of relief broke from both girls. "Let's try another, an instantaneous one," Ruth exclaimed, eagerly; she was fond of picture of horses in motion, and wished to have a snap at the trotting hero of their neighbor's stables—but Susy suggested trying first on Mr. Beldon's pretty Holstein cow, Topsey. The animal in question was seeking, with leisurely tread, for pastures new; however, even slowly walking cows are difficult to focus. Try it, if you think the task an easy one. It was necessary for Susy to keep the camera constantly revolving while Ruth focused Topsey. Every second it appeared more difficult to get her in a satisfactory position, and Ruth finally decided that a cow walking along upside down is rather carrying inversion to an extreme. A black and white cow on her back with her four legs in active motion is not so easy to get in range as a house standing on its chimneys, but at last the deed was done, and Topsey's photograph awaited development.

The triumph of art is certainly to immortalize the features of those we love—nothing could be more delightful than excellent likenesses of each other.

At four o'clock in the afternoon in a room in the northeast corner of the house, the girls were seized with their first over-coming impulse to try portraiture. The posing was difficult—sheets were hung over chiffonieres and dressingtables, beds and chairs were put in new and strange positions, and the room presented the appearance of having been prepared for the kalsominer. Each posed while the other counted the magic one, two, three, four, five, and two pictures were taken, and the plates with a dozen others, were sent to the photographer of the village who was to give them the necessary development. Anxious waiting was the order of the day, and when at last out of all the plates, one quite creditable view of the house, and two very good portraits of the girls were brought to light, they were jubilant and ready to try any subject. Nothing was said of the cases of under-exposure on the picture of Topsey taken in sections, this last one might be led to think was a representation of the severed members of an entire drove of cattle, but that made little difference, Ruth and Susy would probably always be on hand to explain that it was only a semi-instantaneous view of Mr. Beldon's Holstein, Topsey. The sight of that picture will always fill the observer with gratitude, that the retina of his eye, does not furnish sights of objects semi-instantaneously.

The interest taken in the Misses Lloyd's photography became very great; the fair weather had been rather brief, and the number of negatives secured not large, but their local reputation was established. It was suggested that they were anxious to take pictures of the approaching Bartholdi Celebration, whether "semi-instantaneously" of the marching column, it was not decided, but at the time of a halt was thought to be the best.

The autumn days ended without this experience, however, but as they look over their album, containing far more specimens of good than poor work, they are reasonably proud, and their enthusiasm over the art led to something more than efforts with a borrowed camera. With the coming of spring came a "photographic outfit" of their very own, and much zeal was manifested in organizing their camera club, facetiously dubbed, "The Weakly," the fun, failures and fortunate experiences of which would fill scores of pages. It was the unanimous verdict of the twelve members when they met on their third Field Day that no pastime could be more healthful or engrossing than delightful amateur photography. All those who read this, and have their own cameras or even borrowed ones, will not dispute the statement I am sure, and those who have no cameras at all, had better buy, if only a little $2 "outfit," begin work with it, and then give their verdict.

[*From the British Journal of Photography.*]

DETECTIVE CAMERAS.

Never, perhaps, has there been gathered together under one roof and at one time such a representative collection of detective cameras as that displayed at Myddelton Hall on Tuesday evening, on the occasion of the subject having been brought up by the North London Photographic Society,

For two hours did the stream flow rapidly, "one down, t'other come up," the President allowing ample opportunity for each to air his opinions as to the constitution of an effective detective, and to exhibit and describe in detail the outcome of his invention or those in which he felt an interest, although no time was left for discussion.

The subject of detective cameras is capable of considerable subdivision. Its exterior or body is the all-important factor in the determination of its claim to the character it is intended to bear. Some are fitted up with so many more or less elaborate externals as to invite and challenge the attention of the public, the most ignorant of whom cannot be deceived into believing that it is not a photographic apparatus of some sort or another. Two detectives of American manufacture, which the President exhibited and explained, were perfect as regarded this property of non-recognizability. One was made by Anthony & Co., and the other by the Scovill Company of New York. The former was an alligator-skin traveling handbag of innocent appearance; the latter a leather-covered case which, bearing unmistakable photographic indications when first received, had since been so modified in outward aspect that even an expert photographer would now be deceived from its external appearance. Others which were exhibited on the occasion referred to bore the semblance of leather cases or cabinets of various kinds, some were in the form of brown-paper parcels, others in that of cigar boxes. Concerning this, the great thing is to prevent the public from detecting that it is a "detective."

As regards the holding and changing of plates, four different systems prevail, to judge from this exhibition. One of these is the sheath system, described and shown in action in the low-priced "Aurora" detective of Sharland, the "Eureka" detective of Rouch, and in two exhibited by Samuels. In these a number of plates—one dozen and upwards—are each one placed in a sheath formed of thin metal and stored away *en bloc* in a recess in the back of the camera, the front one, after exposure, being raised up and transferred to the back of the others, each in succession thus being brought up to the focusing plane. The manipulations are performed through a small light-proof bag made of pliant material, such as Swede leather, rubber cloth, or any flexible material that does not admit light. A second system consists in the storing of each plate in a separate light-proof bag and transferring it to its place in the camera by gravity; this was the characteristic of one of Marion's shown by Mr. Braun. The third system is the time-honored one of employing dark slides; the fourth being that by means of the roller slide. While on this subject we may remark that a means of carrying into the field an unlimited number of plates, put up in parcels of one dozen each, and capable of being transferred to his own or any similar camera in open daylight, was exhibited by Mr. Rouch.

Shutters for detective cameras are as varied in construction as are the cameras themselves. The elegant little "Plunge" shutter, which responds so readily to the touch of either the ball or the trigger; the circular plate shutter; the straight, flat band plate which passes right across the lens, the mount of which is perforated for the purpose; the Kershaw shutter and its modifications; the Eclipse and Wollaston shutters and modifications thereof; the Newman shutter; and, lastly, a clever drum shutter devised by Mr. William Bedford (who exhibited it), and which rotates horizontally around the back of the lens—these and others were all shown in operation.

Concerning finders: It seems now to be generally conceded that these adjuncts are not actually necessary on detective cameras, seeing that with a little skill one is enabled to point the instrument with average certainty to any object desired and secure it on the centre of his plate. Still, they may prove to be helps in certain cases, although the Chairman and several speakers at the meeting in question said that they had discarded them. A spirit-level sunk into the lid of the camera and along one edge, so as to be seen when the instrument is held either in the vertical or horizontal direction of the plate, was strongly recommended for under-the-arm shots.

All that has been here said concerning cameras of the smaller sizes, such as quarter-plates and five by four plates, equally apply to those of larger dimensions.

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LOOKING BACK; OR, THE OLDEN DAYS OF PHOTOGRAPHY.

BY H. H. SNELLING.

(*Continued.*)

III.

In looking back on men and things concerning photography, I find that my blindness prevents me from following any systematic arrangement, and to relate incidents in the order in which they occurred; therefore, as I have to rely almost entirely upon my memory, my readers must not criticise too severely whatever inaccuracies they may find herein. However, on looking back fifty and sixty years upon events other than photographic, and comparing notes with others older than myself, I find my memory is not very treacherous. We may say to our veterans that we should be pleased to have them jog our memory in any matter they wish to have fully stated—the time of invention, or discovery, for instance.

The manner of men and the styles of galleries, we shall speak of in general terms to avoid invidious personality. After the existence of the daguerrotype became generally known to the public, and made practically a business, all classes of men resorted to it for a living. The men of intellectual ability who entered the portals of the art were not a few, but it was soon overrun by scores who could not tell—to use strong language—a horse from a donkey, unable to make the ordinary sources of business profitable, they imagined that they had in the daguerreotype a means of sure success; and in this idea they were confirmed by men who had gone before them, and required pupils to add to incomes that were not adequate to their support; hence we find that during the first decade of its practice in this country, many pictures were palmed off upon the people that were perfect abortions in all points, and if it had not been redeemed by such men as Brady, Lawrence, Gurney, Anthony, Bogardus and others of their class, the daguerreotype would have been consigned to oblivion before the close of the first decade. I often thought, when visiting these low-grade galleries, that their appearance and the specimens hanging upon the walls must disgust many who entered, a counterfeit presentment. They had that effect on the better educated and refined, many of whom carried their aversion too far, permitting prejudice to condemn the daguerreotype *in toto*, and the first-class galleries suffered as a consequence.

The proprietors of these low-grade galleries were, as a general thing, incapable of improvement, and, therefore, notwithstanding the introduction of improved methods, remained as they began until they sold out to some one no better than themselves, or were sold out by the sheriff. The galleries were in keeping with their owners; up three or five pairs of dirty stairs, they consisted of a small reception room and "operating" room, equally untidy as the stairs; in many cases containing an ordinary centre-table, settee and three chairs, with probably three or four fifty-cent "specimen frames" of their work gracing the dusty walls. In the operating room you would find a chair—perhaps with arms for the sitter, a head-rest, perhaps, large, plain background—sometimes with curtains, and a "quarter" camera. Here originated the miserable "twenty-five cent pictures and the six miniatures," "six on a plate" picture, both of which created no little commotion among the better class of daguerreans. But before this the public had become better informed in regard to the daguerreotype, and, of course, customers were few and far between to the low-grade galleries, and they "must do something" to restore business to its former condition. For a time the rush was great upon the "Original Jacobs," and then the other minor galleries followed suit, and this great division of the business again brought them all back into the old rut.

We have our eye on one man, who undoubtedly did more to injure the daguerreotype business in this country than any other. In talent and ability he was superior to the rest of these low-grade men, but he cared nothing for the art itself, his ambition being solely to make money by it, and that he knew how to do. But his imitators, as a rule, got left. He was the captain of the company, and surpassed most of them in the quality of his pictures; and he took good care to make the public feel that they were indebted to him for their cheap pictures. Occasionally, however, a low-grade operator would work his way up to first-class and "branch out with a large and handsome gallery in some other place where his "Cheap John" reputation was unknown. I regret to say that these low-grade men are not yet all dead. They have taken up the gypsy art of rambling, and you will meet them in their traveling van in the country, on the road, or in the village. Here they "pitch their tent," "bang out their hanger on the outer wall," containing specimens of their beautiful work, mostly on the iron-plate ticket,—"This style for 25 cents," etc., and that is in most cases more than they are worth. Pardon this digression.

I do not know who first went on daguerrean wheels, but it was as early as 1843 that I heard of them, and subsequently became acquainted with some of these. As a rule they were much better daguerreans then many city artists, and some of them were first class. I often think of the first-class artists of the first decade and place them among the wonders of the world, the difficulties they met with were so numerous and so persistent in their occurrence and recurrence. These were rendered the more annoying because the chemistry of photography was not well understood, not having been written at that day. Professor Draper published some notes, and several English and French savants discussed the chemistry of the daguerreotype that were helpful, but there was considerable of a speculative character in these discussions that were merely suggestive. Not until Professor Hardwick published his work was there any attempt to give a systematic and practical treatise on photography.

During the first decade, however, a little book on photography was published in Philadelphia, by Mr. Carey Lea; this was followed shortly afterwards by our "History and Practice of Photography." Both these books—the first printed in America—had good sale; the latter being enlarged and passing through four editions. Previous to this the knowledge of the art was confined to its practice and many of the practitioners were satisfied with the mere mechanical and chemical processes which enabled them to turn out a silver plate with an image upon it. The receipt of the price was the main point of consideration, and of course they ignored—like many farmers—all "book learning." The intelligent, however, seized upon everything that would improve their knowledge and work.

At this time, too, the country was overrun by sharpers "selling receipts and new processes" alleged to be of their own invention and patented, or secured as a secret by the penalties specified in the bill of sale. In most cases these new processes and receipts were either worthless, or had been pilfered from some daguerrean in the large cities. It is not necessary to say who were, and who were not taken in by these sharpers. On looking back to this period from 1840 to 1850, and counting the daguerrean galleries in the City of New York on our fingers, we are somewhat surprised to find so few real intelligent and artistic daguerreans, but those few were "splendid fellows," and maintained their status to the last, giving up the silver plate—some reluctantly—for the collodion and improving upon the "European plan" with marvelous facility. The previous attempt to make negatives on glass coated with albumen found only one man in this country bold enough to buy the patent and make practical use of it. Our old friend J. A. Whipple, of Boston, was that man, and he succeeded in working it, making some very fine pictures, both terrestrial and celestial, but he did not hesitate to abandon it at once when Mr. Archer gave his collodion process to the world. Poor Mr. Archer, his generosity was never requited in kind. He was suffered to fill his grave in abject poverty, in consequence of long sickness, and it was not until the ground covered his body that the photographers of England and America remembered that they owed him a large measure of gratitude and a sum—trifling when compared to his gift, was presented to his widow.

(*To be continued.*)

THE BOSTON EXHIBITION.

Third Notice.

Horace C. Dunham, of Boston, had a very good exhibit. The work was artistic and the photography of a high order. One picture, a lady in a garden, was especially good, the posing natural and attractive and the surroundings picturesque.

F. A. Pratt, of the Boston Club, had three very pretty frames, views and architectural subjects all well done.

John Carbutt, of Philadelphia, had two of the best instantaneous pictures we have seen lately, "A Running High Jump" and "Pole Vaulting," clean sharp work of the highest character.

Miss Emma Farnsworth, of Albany, N. Y., had a number of excellent studies. As examples of thoughtful composition they were very good; photographically they could be improved by more careful manipulation.

James H. Stebbins, Jr., of New York Society, had several pictures of the late Blizzard in New York that were quite interesting as mementoes of that terrible week, and were good, clean photographic work.

Robert L. P. Mason, of the Providence Club, had a number of very good examples of skillful photography. "The Cliffs near Newport," "On the Ten Mile River," were the gems of the collection, full of fine detail and very picturesque.

Edward Leaming, of the New York Society, had a number of excellent pictures. They were in many cases illustrations of thoughts from Longfellow, Tennyson, Tom Hood, and other poets. The ideas were beautifully expressed in the pictures, and gave a very pleasing effect. This idea of illustrating poetical thoughts is a very good one, and Mr. Leaming is to be congratulated in carrying it out so well. All his pictures had the charm that poetry always lends to things of beauty. The illustration of the sunset in "Hiawatha," was exceedingly beautiful in its cloud effects; and another picture, "Birches," was a most picturesque view of some of the fascinating trees.

R. A. Bullock, of the Boston Club, had a number of very pretty pictures, some with very fine effects in foliage, showing much photographic skill.

David Mason Little, of the Boston Club, had several excellent pictures of yachts, and a very fine view of the "Surf at Swampscott, Mass." This latter was very good, indeed, one of the best in the exhibition.

Joseph A. Frizzell, of the Boston Club, showed a number of pictures, the best of which was an intaglio portrait having more than ordinary excellence for such a difficult subject, the lighting being particularly good.

John Bartlett, of the Philadelphia Society, exhibited some of his charming studies with the flash-light. The effects obtained were very remarkable, the lighting excellent, and the artistic work was of the high order always attained by this well-known amateur. We could not find a picture that was not a study in artistic photography.

W. K. Means, of the Boston Club, had a very good collection of excellent pictures. In some the foliage was particularly fine, and we noted two that were good examples of sharp clear photography; one, "Stairway in Old House occupied by the Continental Quartermaster at Siege of Boston, Cambridge, Mass.," was an excellent interior; the other, "Soldiers' Monument, Augusta, Me.," was a beautiful piece of monumental work.

Charles E. Davis, Jr., of the Boston Club, had a very good collection, but they were hung so high it was impossible to judge them carefully. One portrait was very good, and showed skillful photographic work.

F. C. Beach, of the New York Society, had a collection of views that were very well done; "Old Stratford Elms" being a very fine example of this kind of work. But perhaps the most interesting part of this exhibit was a collection of transparencies illustrating the working of the Vergara films. Mr. Beach is very successful with new processes, and these examples showed very well the utility of the new film. He had a positive by ferrous oxalate, a negative by pyro and potash, a positive (portrait) by hydroquinone, and a negative (portrait) by pyro and ammonia; all of which were well done and extremely interesting.

George Marshall Allen, of the New York Society, had a collection of very good work. A group of children on a donkey, "Room for one more," was very good, clean, crisp, and very lifelike. "Chinese Quarters on the Ranch" had some very pretty effects in foliage, and "Grotto Geyser, Yellowstone Park," was very fine, and full of the detail that makes such views so beautiful.

Mrs. Robert W. De Forest, of the New York Society, had but one picture, but it was very good, "Cloud and Sunlight on the Adirondack Lakes." It was printed on salted paper, and made a very artistic picture.

C. W. Canfield, of the New York Society, had one of his excellent studies of flowers, "White Lillies," which was very fine. It was a little dark in the shadows, but a gem nevertheless.

David Williams, of the New York Society, had a number of pictures of "Cloud Studies at Lake George." They were a little hazy but very pretty studies.

L. P. Atkinson, of the New York Society, showed bromide enlargements. They were very good in the matter of detail in the negatives from which they were made; but over-exposure or too rapid development had made them too light in color and lacking in contrast.

Among the transparencies, we note a very fine one by Miss A. L. Richards, "Wharf at Squantum," which were beautifully clear and sharp. S. Fisher Corlies had a fine one, "Harvesting in Pennsylvania," full of detail and an excellent picture. Edward S. Philbrick showed two views, "Newport Harbor" and "Surf off South Side of Newport," both of which were excellent, clean photographic work. George Marshall Allen, of New York, had two views of "Our Cottage—Through the Pepper Trees," excellent pictures and well-made transparencies.

We have given as complete a review of this interesting exhibition as the space allowed us would admit. If we have not noted some exhibits it is not because they were unworthy, but that there were so many that were worthy we had to pass them. Many of the pictures were overlooked owing to being placed too high or standing on the floor, as we stated at the beginning of these reviews. The exhibitors should not be discouraged, but in future should take care that their work is placed in better positions. One thing should be insisted upon, which is that the number of pictures allowed to each exhibitor should be limited, and under no consideration should this rule be broken.

We must congratulate our Boston friends on their success with the exhibition, and we also tender our thanks to Mr. Edward F. Wilder and the other gentlemen of the Boston Camera Club for various courtesies during our stay with them.

OUR ILLUSTRATION.

We give as an illustration with this issue of the Bulletin an example of Mr. J. B. Obernetter's work in photogravure, called in Germany Kupfer-lichtdruck. Mr. Obernetter, of Munich, who made the plate, sends us the following particulars :

"This method of reproduction is a metal-intaglio print. The difference and advantage is in the transfer of an original negative upon the copper plate direct, producing by its density the corresponding depth in the plate. Only by direct transfer is it possible to reproduce the middle tones in all their fineness and complete sharpness.

"For the production of a faultless lichtdruck copper plate, it is of most advantage, if the original negative is placed at my disposal, to make personally the photographic picture. If the original cannot be obtained then a good diapositive is sufficient.

"The main points to be observed are, softness and sharpness. If pictures, drawings, albumen prints, etc., are sent in, a reduction should always be permitted, as they cannot be produced in the same size without retouching. If a faultlessly executed original is sent in, all retouching upon the copper plate is unnecessary, but it is different when the original shows defects which have to be removed from the copper plate.

"A plate so produced can also be multiplied by the galvanic process, although it is not necessary in most cases, if hardened at the proper time. From 2,000 to 3,000 prints can be made from such a plate."

ANTHONY PRIZES AT MINNEAPOLIS.

In order to make the coming gathering of photographers particularly interesting and instructive to the users of Anthony's Reliable Bromide Paper, we have decided to offer the following cash prizes:

For the best collection of		plain enlargements	$50 00
"	"	Crayons, worked enlargements	50 00
"	"	Pastels, " "	25 00
"	"	Ink or Water colored "	25 00

No collection of plain enlargements need exceed half a dozen.

Worked prints may be limited to two, or may be increased in number as the exhibitor may desire.

What we mean above is a picture finished to look like a crayon, pastel, water-color or ink. We do not care whether the work is produced by the air brush, stump point, thumb or brush. It is the result we are after, the means of production are immaterial.

What we want is *quality not quantity*.

Exhibitors should notify us one month before the date of Convention of their intention to compete, naming the class or classes they will exhibit in, and giving a private mark by which their exhibit will be recognized after the awards by the judges, who will be members of the association. On such notification we will return a circular of directions as to shipment, etc.

All pictures in competition for the Anthony Prizes must be forwarded to

E. & H. T. Anthony & Co.,
In care of W. H. Potter, Exposition Building,
Minneapolis, Minn.

Each package must contain a card, stating the name and address of the exhibitor, *and his private mark ; but on no account must any other than the private mark appear on the pictures themselves.* Instructions as to class in which they are entered must also be given, and the pictures numbered on the backs to correspond with the number given of the class of entry.

Judgment will be given to the distinguishing mark to us, but the awards will be announced with both mark and name.

Ship your exhibits in good time, as late arrivals are liable to be overlooked, or, at least, risk the loss of a satisfactory position.

Exhibits must be express paid in every case. Mark the inside of the box cover with your own name and address, so as to prevent mistakes in reshipping.

E. & H. T. Anthony & Co.

AIR BRUSH PRIZES.

The Air Brush Manufacturing Company will offer the following prizes at the Convention of the Photographers' Association of America, to be held in Minneapolis in July, 1888 :

One complete Air Brush will be given for the best portrait in black and white, finished with the Air Brush.

One complete Air Brush will be given for the best portrait in water colors, finished with the Air Brush.

All work competing for these prizes shall be over prints.

The awards shall be made during the Convention by three judges, who shall be members of the Photographers' Association of America, and who shall be chosen at the time of the Convention.

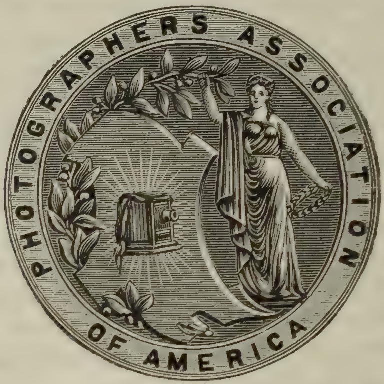
ACME BURNISHER CO.'S PRIZE.

Individual prize offered by the Acme Burnisher Company of Syracuse, N. Y., at the coming P. A. of A. Convention held at Minneapolis, Minn. We offer one of our latest improved 26-inch Acme Photo Burnishers as a special prize for the finest display of plain portrait photography, from an artistic point of view, regardless of the size and number of the pictures exhibited. Judges will be appointed at the Convention. We will have the 26-inch burnisher at the Convention, and it will be delivered after the decision of the judges.

Acme Burnisher Co.,
Syracuse, N. Y.

1888 MEDALS FOR MINNEAPOLIS CONVENTION.

We give herewith a cut of the design for the new medals to be made for the prize winners at the Minneapolis Convention of the Photographers' Association of America. Our readers should now be hard at work with their exhibits for the Exhibition and competition. As the years roll bye these yearly contests in our art are becoming more and more interesting and worthy of earnest consideration by every photographer.



CENTRIFUGAL FORCE APPLIED TO EMULSION MAKING.

BY ANDREW PRINGLE.

[Read before Camera Club Conference.]

(*Continued.*)

I believe that over-separation is the cause of nearly every failure by beginners. It was invariably the cause of my early failures. Over-separation leads to poor, foggy, slow—rank bad emulsion, and the quality of gelatine necessary to make it a thick emulsion, even in appearance, has always puzzled me. With an emulsion cooked to an extremely sensitive state, I find two minutes at a fair pace ample for complete separation, so far as we require it. So far as I can discover, a small portion of the healthy gelatine goes to the side of the drum, binding together, to a certain extent, the particles of silver bromide, etc., while the gelatine that has been decomposed and has lost its setting power, remains dissolved in the water, and is poured off later. This much I know, that I have repeatedly put into the separator an emulsion giving scarlet and other fogs, and after separation the fogs have disappeared; and it seems to be generally agreed that some kinds of fog are due to a combination between decomposed gelatine and silver, though what the precise combination is nobody can say. A less-cooked emulsion should be separated at a higher temperature, and, if convenient, with less gelatine present than a very sensitive emulsion. *Cœteris paribus*, a sensitive emulsion will adhere more closely to the sides of the drum than a slower one. When, after separation, the liquid is poured off, it ought to be examined in the palm of the hand; it will be easy to tell whether separation has been sufficient, insufficient, or overdone. If the liquid is almost clear or only milky, with no sign of deposit on the hand, the odds are separation has been overdone. If it is creamy or sticky to any extent, and if there is found a considerable quantity of "grit" in the palm, the best way is to give it another dose of separation. If it is milky and a slight deposit is seen on the hand, it is probably a good emulsion, so far as separation is concerned. The drum is gently rinsed once with cold water, and the bulk of the gelatine necessary to complete the emulsion having been soaked for a short time in water is used as a mop to remove the deposit from the sides of the drum.

(*To be continued.*)

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E. & H. T. ANTHONY & CO., Publishers.

PHOTOGRAPHIC SECTION—ROCHESTER ACADEMY OF SCIENCE.

DECORATION DAY the section held its first outing of the season at Palmyra, a good sized village twenty-three miles east of the city. A large attendance, a lovely day, fine scenery and a banquet at the Power's Hotel, combined to make it an outing long to be remembered by those who participated.

The attractive object is the creek, which, with its rustic bridges, cozy nooks, picturesque mill dams and aqueduct, makes it a little paradise for the enthusiastic amateur.

The snap of the shutter was heard in the land, and some of the amateurs, with a reckless extravagance that would bring a cabinet smile to the face of a dry-plate maker, shot in all directions, but fortunately no one was hurt.

Mr. Croughton gave the members some valuable hints and demonstrations regarding light and shade in the composition of pictures.

At the regular meeting of the section, Tuesday evening, June 5th, a slight deviation was made from the usual programme, it being a night set apart by the section for the making of lantern slides by the members.

The members entered enthusiastically into the plan, and a goodly number appeared in their Sunday clothes, with their best negatives, developer, printing frames, etc., and while Messrs. Matthews, Croughton, Hovey, Horne and Punnett manipulated the developers the others looked on, occasionally offering a suggestion. The developers used were iron and hydroquinone, and the verdict was in favor of the hydroquinone. One of the negatives made by C. F. Hovey was quite a curiosity in itself, being a drop-shutter view of a hard-fought battle between a couple of "Thomas" cats.

Mr. J. Inglis lent his years of experience towards making the meeting a success.

After the meeting, Mr. Niven tried some of the slides in his lantern and they gave excellent satisfaction.

Albert Z. Jameson was admitted to membership.

Next meeting will be the prize print contest.

MILTON B. PUNNETT,
Secretary.

THE BOSTON CAMERA CLUB.

THE Boston Camera Club held its last meeting of the season on the 4th inst. Four new members were admitted. The Constitution was amended to make fifteen constitute a quorum instead of one-fifth of the active membership as heretofore.

Art. 11 of the By-Laws was also amended, raising the admission fee from $2 to $5 for all applicants elected after the meeting in November, 1888.

The club unanimously voted to withdraw from the Lantern Slide Interchange, and the Secretary was instructed to notify the manager of their action.

The club voted also to send an exhibit to the exhibition of the Amateur Club of Vienna to be held early in the autumn, and the Secretary was empowered to solicit contributions from members for that purpose.

The question of increasing the club's dark room and enlarging facilities, made necessary by increasing membership, was fully discussed, and the Executive Committee were empowered to make the necessary changes, and an ample appropriation was made to defray the cost.

Messrs. Briggs, Wilder and Dodd were appointed a committee to nominate a Lantern Slide Committee of three who shall have charge of all matters connected with lantern slides.

Among the notable events of the past season besides the exhibition (acknowledged on all hands to have been a great success) was the Field Day competition which took place early in April.

Thirteen members participated and the award for the best print entered was a set of the competing prints. This was awarded to Mr. William L. Briggs and mention was made of the offerings of Messrs. Eames, Currier, Wilder and Reed.

The paper on Composite Photography, by Dr. Henry P. Bowditch, Dean of the Harvard Medical School, read before the club on the 21st ult., was also very interesting and enjoyable.

The paper was illustrated by about 50 slides, mostly composites, and containing from 12 to as many as 600 faces.

An interesting feature was the super-imposing on the screen, by means of two lanterns, of two portraits, making a composite of two, and later by super-imposing two composites in a similar manner.

The Entertainment Committee intend to make the coming season still more useful and interesting, and a course of lectures on composition both in landscape and portraiture is not improbable.

E. F. Wilder,
Secretary.

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

A stated meeting of the society was held Wednesday evening, June 6, 1888, with the *President*, Mr. Frederic Graff, in the chair.

The Secretary read a letter from Mr. William Garrison Reed, of Boston, Mass., presenting to the society four photographs of the gallery of the Boston Art Club during the recent joint exhibition.

Also one from Mons. M. Beck, of Paris, presenting a copy of his treatise on Retouching Photographic Negatives. Both donations were accepted with a vote of thanks.

The Committee on Membership reported the election of the following active members: Mr. Albert B. Parvin and Dr. William B. Van Lennep.

The Committee on Presentation Pictures reported the selection of "A New England Watering Place," by Robert S. Redfield, as one of the Presentation Pictures for 1888. Decision as to the other picture was reserved until the next meeting.

Papers were read by Mr. William H. Rau, "On the Reproduction of Negatives," and by Dr. C. L. Mitchell, "On a New Developer—Hydroxylamine and Pyro." (See next Bulletin.)

The following communication from Mr. Frederick E. Ives was read by the Secretary:

"Chlorophyl and cyanin isochromatic plates do not keep well, and the more color-sensitive they are made, the sooner they spoil. I found reason to believe that the deterioration of the plates was due to exposure of the sensitive surface to the air, and tried dipping the newly prepared plates in a thin solution of gelatine, in order to give the sensitive surface a protective coating. The experiment was a success. Plates prepared with cyanin, according to my new method, and then dipped in the gelatine solution before drying, worked perfectly clear long after the unprotected plates gave only a mass of fog. It is therefore possible to produce perfect keeping plates which are more sensitive to orange-red than the best commercial orthochromatic plates are to yellow."

A communication was received from Mr. Edward Tilghman, calling attention to a report of a meeting of this society, held over twenty years ago, as follows:

"Minutes of a meeting of the Photographic Society of Philadelphia, held October 9, 1867. Mr. Edward Tilghman offered on behalf of Mr. Samuel Powel, of Newport, Rhode Island, a corresponding member of the society, a photograph showing the power of actinism to make manifest objects which are invisible to the eye. A band of blue mouseline de laine, covering a checked dress so as to conceal the pattern underneath, was unable to prevent the latter from impressing the negative. The check consequently became visible in the photograph."

Mr. Tilghman claimed that this mention of the power of actinism was the first record of this wonderful capability of the photographic plate, and that credit should be given provisionally to Mr. Powel.

A photograph was shown to illustrate the subject that had been made and exhibited at the meeting mentioned.

A letter which had been received by the President from Bt.-Col. A. C. M. Pennington, U. S. A., in charge of the Department of Photography of the United States Artillery School at Fortress Monroe, Va., was read as follows:

United States Artillery School,
Department of Photography,
Fortress Monroe, Va., May 27, 1888.

My dear Sir:

I notice in a report of a meeting of the Photographic Society of Philadelphia, some remarks on intensification of gelatine plates. I send you an intensifier which we have used here for over two years. Plates intensified as long ago as that show no signs of change. If the hypo is thoroughly eradicated and the plate soaked overnight, I find that it gives better results than any intensifier we have tried, and we have used a great many. If a plate has been thoroughly dried and then soaked, the longer it has been dried the better, the more satisfactory the result. Will you give it to some of the members to try? I should be pleased to hear of the result of their trials. I have never seen it spoken of in any of the journals, and, as far as I know, it is original with us. Yours truly,

A. C. M. Pennington,
Bt.-Col. U. S. A. in Charge.

FORTRESS MONROE INTENSIFIER.

No. 1.

Corrosive sublimate	4 ounces.
Common salt	4 "
Water..................	2 quarts.

No. 2.

Ammonia, concentrated..	1 ounce.
Water..................	20 ounces.

Immerse plate in No. 1 until sufficient intensity is obtained, and plate is bleached thoroughly; wash well, and immerse in No. 2 until dark color strikes through to back of plate. Repeat if necessary.

Mr. Carbutt stated that the peculiarity of this formula seemed to consist in the substitution of chloride of sodium for chloride of ammonium, as generally used. The object of the use of these salts was to aid in dissolving the bi-chloride of mercury.

Mr. Carbutt showed a negative made on a slow gelatine plate especially prepared for photo-mechanical work, in which some printed matter had been reproduced in perfectly clear lines on an intensely black ground. The plate seemed admirably adapted for this purpose.

Mr. Redfield showed two prints representing the interior of the meeting-room of the society. One was made on a Seed 25-plate, and one on a Carbutt orthochromatic 20-plate without color screen. The details in the oak furniture and woodwork, and in the darker portions of the room, whose general tone is yellow or brown, were brought out in a noticeable manner in the orthochromatic plate.

Mr. Carbutt also showed prints from orthochromatic negatives of the University building and a plot of brilliantly colored flowers in the University grounds.

Mr. Burroughs showed three negatives exposed under exactly similar conditions, and for some length of time, but developed one with hydroquinone, one with hydroxylamine and one with pyro and soda as usual. The latter produced the best negative, though, perhaps, better results with the other developers might have been obtained, with some variations in the proportions of ingredients.

Mr. George B. Wood showed some silver prints made on ordinary postal cards. The cards were floated on the baths in the usual manner with albumen paper, without preparation of any kind, and produced very fair results.

He also spoke of a means of focusing in case of breaking the ground glass of the camera. If a focusing glass was placed upon one of the broken pieces of the ground glass left in the frame an accurate focus for the plate could readily be obtained.

He had obtained a perfect print from a cracked negative by suspending the negative from a skylight, face of printing frame down, within six inches of the floor. The process is slow but sure, requiring about an entire day to make the print.

Adjourned. Robert S. Redfield,
Secretary.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

REGULAR MEETING, JUNE 5, 1888.

President H. J. Newton in the Chair.

The *Secretary* reported he had received for the section the May numbers of Anthony's Bulletin, Scovill's *Photographic Times*, Queen & Co.'s *Science of Photography*, and the Chicago *Photographic Eye*, also the usual number of foreign photographic journals and a host of advertising circulars.

The Chairman of the Executive Committee reported that there would be an informal meeting of the section Wednesday, June 20th, at 8 o'clock, P.M., to which all interested in technical photography, were cordially invited.

As previously announced, the principal entertainment of the evening would be an exhibition of lantern slides contributed by members and their friends.

But before darkening the room for this purpose, reports of Committees would be heard, and an exhibition of a new device for producing the flash-light by Dr. Piffard.

The Lantern Committee who had been instructed to make certain changes and additions to the society's lantern, reported progress.

President NEWTON, in accordance with a resolution passed at the May meeting, then appointed the following persons as a committee to arrange for the annual dinner and field day excursion:

Messrs. J. B. Gardner, O. G. Mason, Cornelius Van Brunt, Arthur H. Elliott and Charles Ehrmann.

A resolution was then passed that all of the other sections of the institute be invited to take part in the excursion, and that they be notified by the Secretary and requested to appoint committees to act in conjunction with the committee of the photographic section.

The *President* now introduced Dr. Piffard who said that a great variety of devices had been invented for firing the flash-light, but notwithstanding all these, he had added another to the list; and as it was secured by no patent, all were free to use it; and anyone could either make it for himself or obtain it in the market. The doctor then explained its construction, and gave an example of how it could be used.

The apparatus consisted of a small alcohol pocket lamp about 4 x 3 inches and ½ an inch deep with a tight cover. The alcohol was absorbed by some asbestos kept in place with wire gauze. When ignited, the alcohol gave a large flame, through which the magnesium powder was thrown by a pneumatic powder blower, made of a large rubber bulb, containing within it the bottle to hold the powder. The flash was very effective, the volume of light large, about twenty-five grains giving enough light to have objects fully exposed that were 50 feet away from the light. The magnesium used was pure and without admixture of any kind.

Mr. A. D. Fisk, who had charge of the lantern, then announced to the audience that the first slide he would exhibit was, perhaps, the oldest slide in either Europe or America, and was made by the albumen process by one of our esteemed veterans in the art, Mr. Peter Duchochois, in 1850. This picture was greeted with well-deserved applause, and compared favorably with slides that followed, made by the most recent processes known to the art.

Mr. George M. Allen contributed ten slides of the Yosemite Valley and Southern California. These he uniquely described, thus greatly enhancing the interest and pleasure of his auditors.

Speaking of one of his Southern California trips, he said he visited the Mission Church at San Gabriel and wished to photograph the interior. But the monks in charge of the church persistently refused to allow him to do so. Having an Anthony Satchel Camera with him one day, he wandered into the church and, while apparently in devotion, secured a negative of the interior of the church. The slide made from the negative was shown, and much admired.

Dr. A. H. Elliott then introduced some English slides, regarding which he said: "They were made on gelatino-chloride plates by Mr. Jabez Boothroyd, of Bolton, near Manchester, England, and were remarkable for their fine tones. They were scenes in Yorkshire and Lancashire, and were very beautifully made, the pictures enlarging with fine details even in the deep shadows."

These were followed by a contribution of A. D. Fisk's, consisting of views of Brighton Beach Hotel during the process of removal. The volcanic eruption in one of the Sandwich Islands in 1881. Scenes among the palm groves in Florida, and closed with some of Dr. E. L. Wilson's most noteworthy views in Arabian Petra. Mr. H. J. Newton then exhibited and described some forty views of scenes in Central Park, and marine views in and about New York Harbor. Mr. Newton stated that the details of how these slides were made would be duly published in Anthony's "Annual" to be issued July, 1888.

The slides exhibited were somewhat uneven; but those that were of good density were remarkable for their fullness of detail. The most interesting pictures were those made on ordinary negative plates, these giving the fullest detail and great beauty at the same time. One picture, showing the full length of the Mall at Central Park, was one of the most perfect pictures of the kind we have seen.

Mr. Thomas T. Bedford exhibited some four or five views in the Yosemite Valley and with these the lantern entertainment was concluded.

Mr. O. G. Mason showed some very excellent flash-light pictures of groups (on 8 x 10 plates), and Mr. Thomas Faris a collodio-chloride print on paper from an orthochromatic negative from an oil painting. These pictures were very highly eulogized and regarded by many as the best examples of their kind ever exhibited before the section. The meeting then adjourned.

THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

(*Continued.*)

ANNUAL MEETING, APRIL 10, 1888.

The *President* then read the provisions of the Constitution and By-Laws regarding the annual meeting and election of officers and said "in accordance with the provision of the Constitution and By-Laws which I have just read, I hold in my hand the report of the nominating committee as follows:"

The Nominating Committee appointed by you beg leave to make the following report: that they have given the subject which came under their supervision much thought and very careful consideration, and, as the result take great pleasure in presenting to you and to the society the following names for approval:

For President,
C. W. CANFIELD.

For Vice-President,
H. J. NEWTON.

For Secretary,
CLARENCE S. MCKUNE.

For Treasurer,
C. C. ROUMAGE, JR.

For Directors,
H. C. PIFFARD, M.D.,
JAMES H. STEBBINS, JR.,
J. HOWARD WAINWRIGHT,
GEORGE P. ROWELL,
DAVID WILLIAMS,
CORNELIUS VAN BRUNT,
H. T. DUFFIELD,
CHARLES SIMPSON.

The *President*—The meeting having been duly organized and the nominations read to you and the Constitution and By-Laws regarding the same, the Secretary will proceed with the roll call.

The roll call was read by the Secretary, who reported thirty-two members present.

The *President*—The next business in order is the report of officers. I herewith present the President's report (see p. 233).

Dr. PIFFARD—I move that the report of the President be received and entered in the minutes.

Mr. BEACH—I second the motion.

Motion carried.

The *President*—The next in order will be the Treasurer's report.

Treasurer's report showed—

Receipts to April 1, 1888.....	$4,792 57
Expenditures to April 1, 1888.	4,959 19
Balance on hand April, 1887.	264 75
" " 1888.	98 13

The *President*—Next in order will be the Secretary's report.

SECRETARY'S REPORT.

NEW YORK, April 10, 1888.

To the Society of Amateur Photographers of New York.

The Secretary has only to report the continued prosperity of the association and its largely increased standing and influence among kindred organizations in the United States and abroad. He is in receipt of frequent communications from foreign societies, showing their interest and fellowship with the society in general and the art of photography in particular, and is frequently in receipt of communications from various cities in the United States and Canada where amateur photographers desire to band themselves together as organized associations, and requests for copies of the Constitution and By-Laws are not infrequent. He has responded to all of these requests, and, in several instances, given personal attention to the organization of societies in near-by cities, and is glad to state that the standing of the Society of Amateur Photographers of New York, in the minds of amateur photographers of the United States, appears to be great and growing, and that by its vigorous policy and energetic management it has placed itself at the head of all such societies in the United States.

The membership in the society has increased rapidly and steadily until, at this date, the total membership is 258, distributed through the various classes, and compared with the membership at the date of our last annual meeting as follows:

	Active.	Subscribing.	Corresponding.	Honorary.	Total.
1888	209	12	31	6	258
1887	131	13	26	5	175
Increase.	78	......	5	1	83
Decrease	......	1	......	......	......

The total increase for 1885 was 35, for 1886 47, and, as shown above, for the current year, 83, which is certainly a very creditable showing. During the year we have lost by death, Mr. Joseph W. Drexel, one of our most honored members, and at this writing, grave fears are entertained for the life and safety of another member, Mr. C. Smith Lee, who sailed from this port on the yacht Cytherea on the 11th of last month, and has not since being heard from.

In relinquishing the office which he has held for several years, the Secretary does so only from a feeling that he has done his share of the hard work devolving upon the officers of the association, and that it is only right that whatever honor the position confers, and whatever labors and duties may devolve upon the incumbent thereof, should now be transmitted to a successor, and he thanks the members generally for their kindness, aid and assistance to him in the transaction of the affairs and business of his office. The records of the meetings of the society, as printed from time to time and mailed to each member, show the work that has been done, and speak for themselves without further comment.

With best wishes for the health and happiness of the members, and the continued prosperity of the society, this report is respectfully submitted.

J. T. GRANGER,
Secretary.

The *President*—You have heard the Secretary's report? What shall be done with it?

Mr. WAINWRIGHT—I move that it be received and spread on the minutes.

Motion carried.

The *President*—The next report will be the Librarian's.

LIBRARIAN'S REPORT.

The Librarian acknowledged the receipt of books, photographs and albums donated to the Society; also the purchase of books, and continued:

Messrs. E. & H. T. Anthony & Co., have continued to furnish the society, gratuitously, each month, 300 printed copies of the society's proceedings—they should receive a vote of thanks, as well as the other publishers who have so generously contributed to our files.

The Librarian takes pleasure in stating that the library is in good order, each book has been numbered and indexed, and he desires to thank Mr. Clarence S. McKune for his valuable assistance in making the catalogue.

Respectfully submitted,
C. C. ROUMAGE, Jr.,
Librarian.

Mr. STEBBINS—I move that the report be received and spread on the minutes.

Motion carried.

The *President*—The society has been presented, as you remember, with a set of lenses by Mr. Reed, and also some portrait lenses by some other gentleman. Credit has not been given in the reports, but it has heretofore been mentioned in the meetings of the society.

The *President*—The next order of business is the election of officers and directors, and it becomes necessary for me to now appoint tellers.

Mr. WAINWRIGHT—*Mr. President*, are there any other nominations than those submitted by the Nominating Committee?

The *President*—No, sir.

Mr. WAINWRIGHT—As the Constitution provides that the election shall be by ballot, I move that the Secretary be directed to cast one ballot for each member nominated by the Nominating Committee.

Motion carried.

The *President*—I appoint Mr. Allerton and Mr. Bishop as tellers.

The *President*—The Secretary will be kind enough to cast one ballot for each person named by the Nominating Committee.

The Secretary then cast one ballot for the ticket as reported by the Nominating Committee.

The *President*—I declare these gentlemen to be elected. (Applause.) The Constitution now provides that the officers, when elected, shall take their places at once.

I appoint Mr. Wainwright a committe of one to conduct Mr. Canfield, the new President, to the chair. (Applause.)

Mr. Canfield was then conducted to the chair.

Mr. WALKER—*Ladies and Gentlemen:* I have the pleasure of presenting to you Mr. C. W. Canfield, your new President. I trust you will support him as earnestly and faithfully as you have supported me, and stand by him in sickness, in sorrow, in tribulation, troubles and criticism, and in short, do the handsome thing by him. (Applause.) If you will do that you will have my kindly regards.

President CANFIELD—*Ladies and Gentlemen:* Under the circumstances I suppose I am expected to promise to "Love, honor and obey," and so far as in me lies I very heartily do so.

It is with very great diffidence that I assume this position. The nearer I have seen this election approach, the more I have felt as I imagine condemned criminals may feel in their cells, on hearing the bells strike out their appointed hour, because the gentlemen who got out of office say the position is not one of a great deal of comfort. I take, however, some consolation from the fact that our ex-President who has so worthily discharged the duties of his office, looks back with satisfaction on the distinction which is conferred by sustaining an official connection with this society. I have felt that to-night more than I ever have before. I have only to say, fellow members, that I shall try to do my duty, as I understand it, and I hope for your hearty support and will try my best to merit it. (Applause.)

The *President*—Is there any miscellaneous business?

Mr. STEBBINS—*Mr. President*, at a former meeting of the society I offered a resolution that a committee of five be appointed by the Chair, two of which should consist of the members of the Board of Directors and three from the society at large, for the purpose of revising our Constitution. That motion was laid on the table, and I therefore move that it be taken off the table and be considered this evening.

The President stated that according to the minutes of the last meeting the motion was not laid on the table.

Mr. STEBBINS—Then I make a new motion that the Chair appoint a committee of five, two of which committee shall be from the Board of Directors, and three from the society at large, for the purpose of revising the Constitution.

Motion seconded.

Mr. DUFFIELD—I move, Mr. Chairman, as an amendment, that a committee be appointed either to amend, or prepare a new constitution as they see fit.

Mr. STEBBINS—I accept that amendment.

Mr. WAINWRIGHT—I object to accepting the amendment and I demand a vote on that.

Dr. PIFFARD—*Mr. President*, this motion of Mr. Stebbins is one which I think is unnecessary for the reason that I think Mr. Stebbins himself is competent under the By-Laws to prepare any changes that he desires and offer them in the usual way for discussion and adoption. He is also competent to select three other gentlemen from the membership of the society, and another member of the Board of Directors, with himself, and form the committee himself; and I suggest that this motion which he offers fall, and let him, as he is perfectly competent to do, under the By-Laws, appoint a voluntary committee, and let us see in what respect we ought to have changes made in the Constitution. The motion is unnecessary. You are simply empowering them to do what they are already empowered to do.

Mr. WALKER—I think, Mr. Chairman, the motion ought to take some different form. There are many changes that ought to be made that will conduce to the welfare of the society and they ought to be formulated by a body of men appointed for that specific purpose, and they can make suggestions in proper form to the Board of Trustees, and the matter would then come in better shape before the society than it would if Mr. Stebbins selected two friends and then informally presented it. I am in favor of the motion and its adoption.

Dr. FULLER—I move as amendment, that the matter be deferred, for the President's sake, for one month, as the Constitution has been discussed for more than a year—the new President should have a little relief in regard to the matter, for say, at least a month.

Dr. PIFFARD—I second the amendment.

Mr. BEACH—I object to it.

Dr. PIFFARD—That is not debatable.

Mr. STEBBINS—I object to Dr. Fuller's amendment.

Mr. WAINWRIGHT—I rise to a point of order—if it can be called a point of order—for notwithstanding Mr. Stebbins' objection to that amendment, it has been regularly moved and seconded. Therefore the question comes on Mr. Fuller's amendment first.

The *President*—The question is on Mr. Fuller's amendment, that this question be deferred for a month.

Motion carried and the matter deferred for one month.

Mr. Walker offered a motion that some rule be adopted to the effect that no one except the properly authorized person or persons shall report any of the proceedings of the society to any of the public journals.

Motion lost.

Mr. WILLIAMS—In accordance with a suggestion of one of the reports, I move that a vote of thanks be tendered to the persons and firms who have contributed funds to the society during the year, and that the Secretary be directed to notify them of our action in that regard.

Motion carried.

Mr. BEACH—I offer the following:

"*Resolved*, That, as the prosperity which the society has enjoyed during the past year, as shown by its rapid increase in membership, has been largely due to the faithfulness of *President* WALKER, in attending to its affairs, we hereby tender to him our hearty thanks, and assure him that he takes with him in his retirement from office our best wishes and esteem."

The resolution was unanimously adopted.

The *President*—Is there any other miscellaneous business?

Mr. BEACH—I think that the Secretary and the various Treasurers of the society, and Mr. Roumage in particular, should all receive a hearty vote of thanks, and I make that motion.

On motion of Mr. Beach a vote of thanks was extended to all the retiring officers.

Motion carried.

The *President* then called on Dr. Piffard, who demonstrated his improved method of magnesium lighting, specially adapted for studio and gallery use (See p. 217).

Mr. Beach then exhibited an improved universal ball-and-socket joint intended to be secured to the top of an ordinary camera stand, sent him by the inventor, Mr. J. E. Dauchy, of West Winsted, Conn. It was intended for 5 x 8 cameras. He regarded it as a very simple and effective invention, of special use where it is difficult to place tripod legs, so that the head of the tripod will stand level.

The Secretary then read the report of the Committee on Joint Exhibition.

NEW YORK, April 10, 1888.

The Committee on Joint Exhibition reports that the circulars sent us from the Boston Camera Club have been mailed to all members, and the entry blanks sent to all applicants. These have been numerous enough to insure a fair representation of the society, but it is desirable that still others should make an effort to increase by their contributions the showing of the society.

Lantern slides, as well as framed prints, if sent to these rooms on or before Friday, April 27th, will be packed and shipped at the society's expense.

Entry blanks and any information may be had from the committee.

C. W. CANFIELD.
CLARENCE S. MCKUNE.
H. T. DUFFIELD.

MR. BEACH—I move that the report be accepted and placed on file.

Motion carried.

MR. BEACH—While we are convened, I would make a motion that this society accept the rules laid down by the Conference at Philadelphia, in regard to the interchange of lantern slides.

MR. DUFFIELD—I second the motion.

DR. PIFFARD—I want to state, as a matter of history, that those rules were read here one evening when there were about seven or eight men present. They were heard in silence and one man said we had better not go into it, and finally another man said the same thing and the conclusion was we did not go into the matter that night. It was about six weeks ago. Mr. Wainwright was there and quite a number of gentlemen. So I think the matter had better be laid over until next month, or until it can be looked into more fully.

MR. DUFFIELD—I think Mr. Lawrence, who represented the society at Philadelphia, has changed his mind and is very anxious the society should go into it, but perhaps it had better be deferred until Mr. Lawrence is present.

MR. WALKER—The conference is very anxious to have this society send in its determination. Several other associations have adopted it, with the exception of the Boston society.

The *President*—What is the position of the society in regard to the matter?

MR. WALKER—The committee has reported the result of the conference, and awaits the action of the society.

The *President*—Are there any other remarks on this question? The motion is that the society accept the agreement drawn up by the Conference at Philadelphia in regard to lantern slides.

MR. WAINWRIGHT—I move as an amendment that this matter be referred to the Board of Directors with power——

MR. WALKER—I second that amendment.

MR. BEACH—I accept that amendment.

Amendment adopted.

On motion, adjourned.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

Q.—R. W. writes: If Anthony's Developer for the Stanley plate gets frozen, will it work as if it had not been frozen?

A.—Yes. If the bottle has been kept well corked the developer does not suffer from freezing.

Q.—S. R. C. writes: I have been experimenting on enameling photographs for several weeks when I had leisure time, and so far have not been very successful. Will give my method of working. Plain collodion, alcohol and ether, equal parts; gun cotton, from 4 to 6 grains to the ounce. I used negative cotton (Anthony's) and I guess that was wrong. Think I should have had some glacé cotton. I also think my ether was not just what it ought to be either. The glass I use is nice negative glass. I clean it thoroughly and take a fine sable brush and put a little gum solution all around the edge. My gum solution is gum arabic and water. After the gum solution is dry I coat the plates with collodion and let them dry. When I am ready to use them I go about it as follows: To 16 ounces water I dissolve 2 ounces gelatine, and when pretty warm I filter into a dish for use. I cut some paper, about as heavy as cartridge paper, 5½x7½, put one of these in the gelatine solution, and a print also in about half or one minute. I take print out and lay on collodion side of glass and the piece of paper on top. Now with the back of a rubber comb I strike out all air bells and set up to dry. When dry, or very nearly so, I cut through the paper on back of print close to edge, and then the trouble begins. They do not loosen from glass. There are places more or less large that stick to the glass and tear the print so that it is useless. Have tried several ways of cleaning the glass before flowing with collodion, so as to avoid that sticking, but so far have failed. I have tried French chalk and parafine dissolved in benzine, but all to no purpose. Knowing that you are posted on the above kind of work, I ask your advice in the matter. The gelatine I used was the sheet gelatine, such as is used for jellies and cooking purposes. I think probably that was wrong. The print never extends out to the line of gum solution I use on the plate.

A.—To glacé prints, take any ordinary glass, soak it in nitric acid, and then wash clean. When dry rub it over with French chalk, then clean off the excess. Now coat the plate with Anthony's Glacé Collodion. Have ready a 20-grain solution of French gelatine in water, kept warm in hot water bath. Immerse proofs in the warm gelatine and lay them face down upon the collodionized surface of the glass plate, and rub out all air bubbles with a squeegee. Let the whole dry, and then cut around the edges and peel the print off the glass. To keep full gloss in mounting, paste heavy plate paper over the back of print previous to stripping and the pictures can be removed without losing gloss and mounted upon cards by touching the corners with good white glue.

Q.—"VARNISH" writes: Enclosed find photograph. Please answer in BULLETIN what is the cause of stain over face and background? It left the studio two weeks ago in good condition; returned as you see it; to the best of the customer's knowledge he got nothing on it. Made varnish as follows: 12 ounces bleached shellac, powdered and dry, to 1 gallon 95 per cent. alcohol, but it will not settle. What is the cause, and how can I save what I made? Never had the trouble before. After floating one or more sheets of N. P. A. paper on a 50-grain slightly alkaline bath, the bath turns brown—how can I prevent it? Have used exclusively the Stanley plate and the old Hoover potash developer ever since the plate has been in the market, with excellent results. Since I located here I have had trouble with them. The image comes up very nicely until the plate is about two-thirds developed, then ceases, and no amount of developer will move it. The water here is very hard—is it that? Or the developer, and which part of it?

A.—The trouble with your print appears to be that hypo (it looks very much as if a dirty cloth had touched the surface) has come in contact with it; this is just the kind of marking that such a contact would produce. A mere trace of hypo takes time to develop its effect, but it will surely do it, if you are not careful. The best printers never have hypo in their printing rooms, or near them, under any consideration. In regard to the shellac varnish, a very slight impurity in the shellac might make it look milky; but alcohol of less than 95 per cent. will produce the same result. Are you sure that it was 95 per cent.? Take some good, strong alcohol, shake up with good, well-burnt quick-lime, and allow to settle. Pour off and filter the alcohol and add it to the shellac; this may help you out. The trouble with your printing bath is probably that it is too alkaline. If the water you use for making your developer is very hard, you had better reject it and use distilled water.

Q.—A. F. N. writes: I note in your issue of May 12th, the anti-dark-room developing box of H. Riedel. Please give full particulars and cut of box. What kind of cloth is used and where can it be obtained?

A.—We cannot undertake to illustrate this box, and a description without cuts would be useless. Write to Mr. Riedel, care of Charles M. Heid, Photographic Association of Brooklyn, and he may furnish fuller particulars.

Q.—A. W. W. writes: Is there any practical way of freeing a printing bath of albumen, besides burning? I think I have read a formula, but have forgotten it. An answer in BULLETIN will greatly oblige.

A.—Add a little alum to the bath, heat to boiling and then make alkaline with carbonate of soda and boil again. Now place in bright sunlight for some hours and then filter and neutralize with c. p. nitric acid.

Q.—F. J. H. writes: Will you please answer the following questions? May hydroquinone developer be used on bromide paper? What is the best lens for enlarging on bromide paper and will a Darlot view lens do?

A.—You may use hydroquinone on bromide paper, but it requires practice to get good results; the tones incline too much to brown. A Darlot lens will do for enlarging.

Q.—F. M. L. writes: Will you please answer through the BULLETIN the following questions? Some instructors say to fume sensitized albumen paper fifteen minutes, some thirty, and others even longer, just before printing. Is there any danger of over-fuming so long as the fumes do not discolor the paper? In pyro and sal soda developer, the sulphite of soda often falls to the bottom and forms a hard cake. What is the cause of it? Is it because it is kept in too low a temperature? I use Seeds's formula. How long should this developer keep good, well corked, in a moderately cool place? Is the sal soda that is kept in drug stores supposed to be of the same strength as that kept by photographic stock dealers? I notice in using ready sensitized paper that sometimes some of the sheets, after the pictures are finished up, have a more or less measly appearance, while others are smooth and all right, all being fumed alike and taken together through the same baths. In this case was not the measly appearance due to the silver bath being too weak? Is all ammonia that is marked concentrated supposed to be of the same strength? After using a toning bath, can it be bottled and kept and used time after time by adding gold and keeping up the strength? Are instantaneous views generally considered equal to time exposures in general detail appearance? I use the Stanley lightning plates for instantaneous work, and like them immensely. By answering these questions you confer a favor on me, and will be imparting information to many new beginners.

A.—Long fuming does not injure the paper if it does not turn brown. A developer that will deposit at ordinary temperatures is extremely misleading and should not be used. The salts that separate change the strength of the developer. A good developer in a well-corked bottle will last many (say six) months. Sal soda of drug stores is often impure and not to be trusted for making developers. We do not understand your trouble with the paper; send us a piece to look at. Ammonia, as usually sold, is never of the same strength; it so easily loses ammonia gas and gets weaker. If a proper diaphragm is used, instantaneous pictures on rapid plates give full detail if properly developed. The toning bath is good if clean and the strength kept up.

Q.—F. G. A. writes: Will you tell me, in the next issue of the BULLETIN, what is the object of using nitrate of ammonia in the nitrate of silver bath for sensitizing N. P. A. paper? Is there any way of renewing an old gold toning bath that tones pictures very red? The bath itself is very red.

A.—The nitrate of ammonia helps to render the albumen on the paper more insoluble than with silver nitrate alone. There is no easy method of renewing an old toning bath.

Views Caught with the Drop Shutter.

THE Air Brush Mfg. Co. will be represented by an expert at the Convention, and all artists whose brushes are out of order are invited to bring them and have them adjusted without charge.

HENRY A. HYATT, of Kirkwood, Mo., has filed suits in the United States Circuit Court against Duran F. Hulbert, of the firm of Hulbert Brothers, and Charles H. Tondorff, an employee of the firm, alleging an infringement of photographing apparatus.—*St. Louis Globe Democrat.*

CORLIES.—On the evening of the 13th inst., S. Fisher Corlies, in the 58th year of his age.

Relatives and friends are invited to attend the funeral from his late residence, 1717 Arch street, on Saturday, at 2 P.M. Interment private.—*Philadelphia Ledger.*

This gentleman was one of the members of the Old Photographic Club, mentioned by Professor Coleman Sellers on page 339 of the BULLETIN.

A Special Edition of Walzl's Photographer's Friend comes to us laden with a host of good things in the way of photographic apparatus.

Can any of our readers give us the address of Mr. A. S. Barber, photographer, late of Providence, R. I.?

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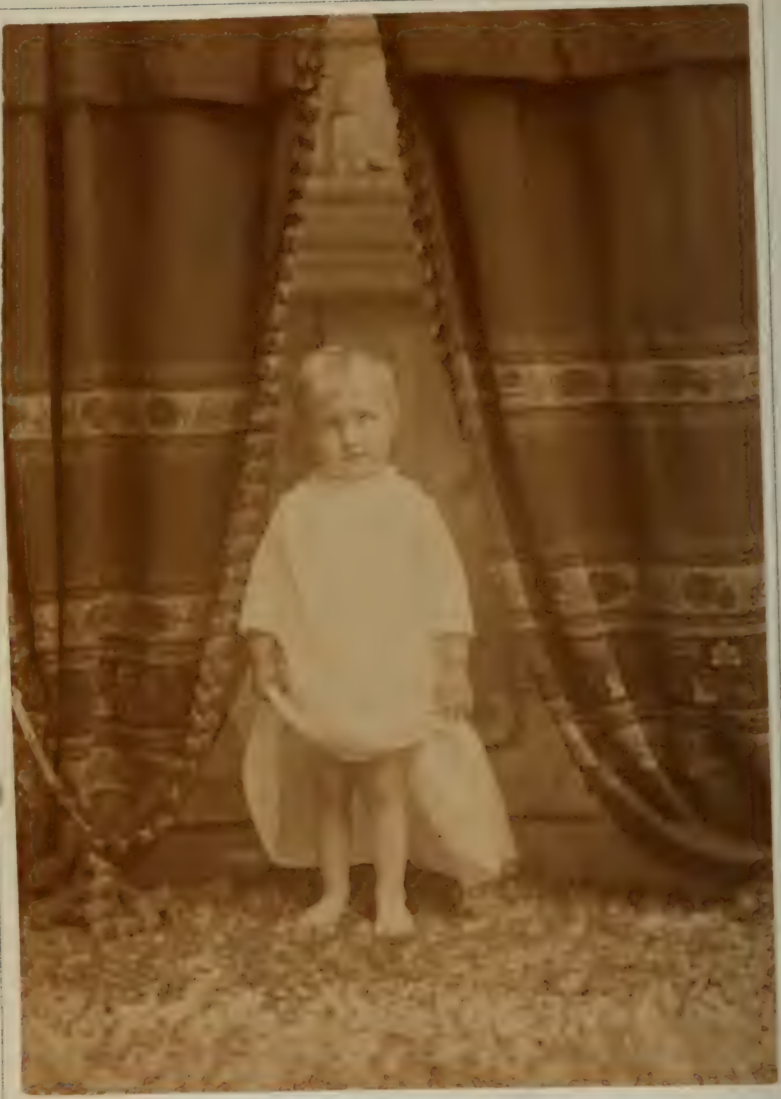

A Study in Posing

BY

G. M. Elton,

Palmyra, N. Y.

ANTHONY'S
Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

JULY 14, 1888.

Vol. XIX.—No. 13.

STELLAR PHOTOGRAPHY AT HARVARD COLLEGE OBSERVATORY.

THE second annual report of the Director of the Observatory, Professor Edward C. Pickering, upon the work done under the Henry Draper Memorial, is now before us. As the work progresses new devices and methods of overcoming difficulties gradually unfold themselves in the minds of those who have charge of this important application of photography. When we think of the difficulties hitherto encountered in mapping the heavens, the patient work of scores of men for many, very many years, we can readily understand the joy of the astronomer when he finds that he can use photography for this purpose, and with an accuracy unattainable by means of the telescope and human eyes and hands. The maps of the heavens at present constructed, have cost a great many years of careful labor with the telescope and the human eye; but now it appears almost certain that by the year 1900 maps will be completed, covering the whole visible heavens, and containing records unattainable by any other method than the photographic plate; so perfect have become the processes of preparation of the gelatine emulsion.

In work of this character, we are proud to say that Harvard University under the fostering care of the Henry Draper Memorial, stands in the first rank. Many observatories in other parts of the world are laboring in the same fields of research; but none of them seem to obtain results so rapidly as the little group of buildings at Cambridge, Massachusetts. The work at Harvard has gone on so well that it is proposed to send an expedition into South America, probably Peru, in the year 1889, and then complete the work to the South Pole.

By improvements in the sensitiveness of dry plates stars of nearly a magnitude fainter can be photographed than was possible a year ago, and the number of objects that can now be examined is nearly doubled.

Professor Pickering also mentions the advance in finding out the faults in the methods in use; thus he says:

"Various improvements have been made in the methods of detecting defects in the photographic processes. Each plate, when it is removed from its box, is exposed to a standard light for exactly one second. The portion of the flame of an oil lamp shining through a small circular opening constitutes the standard

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light. The exposure is made for a second by means of a pendulum, which allows the light to shine on the plate for this interval through a small square aperture. When the plate is developed, a dark square appears near its edge, whose intensity measures the sensitiveness of the plate, and also serves to detect any defect in its development. Passing clouds or a variation in the clearness of the sky are detected by means of an instrument called the Pole-star recorder. It consists of a telescope with a focal length of about three feet, placed parallel to the earth's axis. An image of the Pole-star is formed by it, and allowed to fall upon a sensitive plate, describing an arc of a circle, which is interrupted whenever clouds pass. The plate is changed every day, and the instrument is closed automatically by an alarm clock every morning before twilight begins. Much trouble is experienced from the deposition of moisture on the objectives of the photographic telescope on account of their exposure to a large portion of the sky. The failure of some earlier plates may be due to this cause. Moisture is now carefully looked for, and if detected, removed by gently heating the objectives. Another test of the quality of the plates consists in occasionally exposing a plate in the 8-inch telescope to the circumpolar sky, first with and then without the prism. The trails of the stars near the pole and the spectra of the brighter stars are thus photographed. A comparison of the intensity of these images tests the condition of the the air, the instruments, and the plates."

We have not space to give in detail all the interesting things we find in this report. All the brighter stars have given photographs of their spectra with the 8-inch telescope and an exposure of at least five minutes. Faint stars require an exposure of one hour or more. The number of plates taken and measured during the two years that this work has been going on is 633. The whole number of spectra taken is nearly twenty-eight thousand. The spectra are divided into types, as usual, and each additional line visible is recorded as to intensity and position. The photographic intensity of the bright parts of the spectra are measured by a graded photographic plate, dark at one end and light at the other. In some cases over three hundred spectra appear on a single plate. The brighter stars are studied with Dr. Draper's 11-inch telescope using four prisms, each about a foot square and having an angle of about fifteen degrees. These give a spectrum about four inches long. By an improvement in the enlarging apparatus, a slit placed over and perpendicular to the axis of the cylindrical lense, which reduces the aperture in one direction, without affecting the width of the spectrum, a better definition is obtained and the spectra are more brilliant.

The 28-inch reflector of Dr. Draper is now ready for use and a special spectrascope attachment has been devised for it. The area or the aperture of the telecope being about eleven times greater than the 8-inch hitherto used, it is expected that much fainter stars can be photographed with it.

We must tender our best thanks to Professor E. C. Pickering for kindly sending us a copy of this interesting second annual report of the Draper Memorial, and would also congratulate him on his continued success in stellar photography.

* * *

"Johnny," said the careworn editor to his only son, "I know you want to help your poor old father and give him an item, but I would rather you'd stay away from the pond till the ice gets thicker. You may come handy to feed the press."

EDITORIAL NOTES.

We note that several authors recommend the use of rubber stoppers for bottles holding solutions of developers and such compounds. If these solutions are acid there is not much to fear from such a proceeding; but if, as is generally the case, the solutions are more or less alkaline, then trouble will undoubtedly follow the use of rubber stoppers in the bottles holding such solutions. Pure rubber (Pará gum) would not be affected by any ordinary alkaline solution; but the ordinary rubber stopper is vulcanized, that is it is treated with sulphur to keep it from getting hard and brittle. This sulphur is not very strongly combined with the gum, and is ready to combine with alkalies when brought into contact with it. The consequence is that alkaline developers will dissolve the sulphur from contact with rubber stoppers and the solution will contain an alkaline sulphide, the presence of which would blacken any gelatino-bromide plate, even when unexposed. Therefore we recommend our readers not to use rubber stoppers in bottles holding alkaline developers.

The Photographic Society of Philadelphia have recently had an excursion of its members into the Catskills. The idea is a good one and our New York Society of Amateur Photographers should get up something of a like nature. How would a canal-boat trip meet the ideas of members of the society. A voyage of a couple of days through one of the canals running out of New York would be very delightful and afford much food for cameras and dry plates.

Professor Coleman Sellers, whose many contributions to our pages have made him a familiar author to our readers, has recently had a well-deserved honor conferred upon him, he has been made a Doctor of Engineering (E. D.) by the trustees of Stevens Institute. He will also be a professor in the same institution. We must congratulate our good friend on the aquisition of such a well-deserved honor from such an institution.

Professor C. F. Chandler is engaged in completing a work on photo-mechanical processes which will be published by the Grolier Club of New York. He is specially desirous to include the addresses of all firms engaged in photo-mechanical work, either in the production of blocks or plates, or printing. Those interested should address Professor C. F. Chandler, School of Mines, Columbia College, New York City.

We reprint the following from our esteemed contemporary the *British Journal of Photography* for the benefit of those of our readers traveling in England. "The editorial and publishing offices of this journal, situated in the center of London, are entirely at their service, and commodious dark rooms, in which to change and develop plates, not being the smallest inducement. A special letter of introduction will not be found necessary." Those of our readers who wander thitherward should try the good things offered by our friend J. Traill Taylor, the genial editor of the *Journal*.

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All communications for the columns of the Bulletin *should reach us on Monday preceding the day of issue, to insure their publication at that time.*

[*From Photographisches Wochenblatt.*]

WORKING UP SILVER RESIDUES FROM FIXING SOLUTIONS.

BY F. STOLZE.

(*Continued.*)

It is put into a large bottle of eight or ten times its volume, and so much distilled water or at least water free from chloride of sodium is added, that two-thirds of the bottle are filled. It is now closed with a cork or rubber stopper having three holes through which a funnel and a glass tube reach almost to the bottom, while in the third opening is a short conduit-pipe, from which a rubber tube leads into a stove flue or to the window. The long glass tube is connected by means of rubber tubing with a small steam-vessel, a suitable bottle or vessel made by the tinsmith for the purpose. The water in the vessel is brought to boiling heat, so that the steam passing through the same will also cause the liquid in the large bottle to boil. Nitric acid is now added through the funnel to decompose the sulphide of silver, and to obtain the silver in the form of nitrate. That this may be able to form, not only the necessary acid must be present, namely 32 parts acid free from water, to 100 nitrate of silver, but there must be also added sufficient acid to form oxide of silver, whereby oxide of nitrogen N_2O_2 escapes, which by mixing with the air, oxidizes to the red vapors of the hypo nitric acid N_2O_4. Returning to the above case, regarding a quantity of 100 parts of sulphide of silver sulphur, containing 69 parts of metallic silver, one will find that for the formation of oxide of silver 33.75 parts, for the formation of nitrate of silver from this 48.35 parts, together, therefore, 82.1 parts nitric acid, free from water, are required. If, therefore, a strong acid of 1.42 specific gravity equal to 60 per cent. of acid, free from water, was applied, 1.37 parts of the same would be sufficient. But in reality a much larger quantity of acid has to be used, too weak acid decomposiug sulphide of silver only very slowly. The question might be asked, why not add less water to the mass; but then it will become pasty, puffs up forcibly during the development of the oxide of nitrogen, and causes difficulty in the treatment. It is best to heat with the above quantity of acid about one hour; to decant the upper liquid, to wash the deposit about four times with distilled water, and to add the same to the mother-liquor. The digesting of the sediment is then repeated with water and acid, and one proceeds exactly as the first time. This is continued until the clear filtered solution of the washed sediment, a small sample of which may be heated with nitric acid in a beaker glass, gives no precipitate of any consequence with muriatic acid. All the water containing nitrate of silver are now filtered and they are treated for nitrate of silver, which may result in 109 parts.

As a carbonate salt for precipitating the carbonate of silver, ordinary washing soda in concentrated solution is applied. It has to be carefully added, the carbonic acid developed during neutralizing of the superfluous nitric acid, easily causing an overflowing of the solution. Until this neutralization has taken place, the carbonate of silver having formed at the place where the solution is poured in, will always dissolve again. As soon as it remains undissolved, it is best to use only artificial light for all further work to avoid a blackening of the carbonate of silver, rendering difficult the solution of the same in nitric acid. Soda solution is now added so long as a yellowish-white deposit forms, which can be cleaned only by precipitation, decanting of the mother-liquor, and repeated washing with distilled water.

No haste should be exercised, but the carbonate of silver should have time to settle, at least, a full day after each stirring with fresh water.

The product so obtained is now carefully dissolved with pure nitric acid, so that nothing overflows by the development of carbonic acid. It dissolves quickly and sure. A small quantity of the carbonate of silver is left undissolved. To make sure that the nitric acid solution which formed is neutral, with the aid of a good silver-test it can be used at once, or it may be evaporated and fused.

The whole proceeding—with a little experience and practice—is very simple. The principal advantage being in the actual certainty to obtain the largest possible amount from the silver residue, while this is doubtful, when the same is given to the refiner, where the best part may oftentimes remain in the waste. This may easily take place in the fusing of sulphide of silver, when the ordinary means of fusion, carbonate of potassium, carbonate of soda or borax are only used, whose sole application requires a very high temperature. An addition of iron-filings is here almost necessary. They will bring as quickly and surely the reduction of the silver with formation of sulphide of iron.

So far, I have been speaking only about obtaining the silver contained in the fixing solutions, as well as the silver haloid salts, soluble in the same, and the silver in unfixed plates and negative films. But there are still other residues, which likewise might be mentioned and treated upon shortly.

Spoiled gelatine emulsions may either be squeezed to pellets, and put into a fixing solution, or they had better be melted down, adding muriatic acid and heating them to destroy the gelatine, whereby the above described steam-cooking apparatus is excellently suited. If the cooked mass is left to stand, the silver haloid salts will completely precipitate, and can now, after some washing, be dissolved in the fixing solution; in case it is not prepared, to set the salts as they are, or to reduce it in the wet way directly to silver. This can be done in different manners. The most convenient and thereby certain method is that of Mohr. In the tray containing the silver salts is poured some very diluted sulphuric acid (1:60), a piece of zinc of appropriate size, to which is fastened a silver wire, is tied in such a way to a piece of wet bladder that the wire can be seen, and this bag is placed into the tray so that the wire will touch the silver salts. Leading from this point the latter will gradually be reduced through the whole mass, while the zinc dissolves, without contaminating the silver from any parts that may remain undissolved. This is then well washed and dissolved in nitric acid. Or, according to Mohr, alkali solution is brought to a boil in a vessel, to which the haloid salt stirred up in water is carefully added, so that the boiling is not interrupted and the haloid salt is prevented from forming a paste at the bottom of the vessel. It is changed hereby into oxide of silver, which is washed thoroughly and dissolved in nitric acid. Or the haloid salt is cooked with alkali solution and grape sugar, whereby it is changed directly into metallic silver. The latter method can also be applied to the direct production of the silver from emulsions, boiling with caustic alkalies, destroying likewise the gelatine. But this proceeding is very tedious and requires oftentimes many hours; one is even sometimes unsuccessful without being able to give a reason for it, so that the solution remains dark without any deposit. It is, therefore, always advisable to first separate the haloid salt from the gelatine by cooking with acid.

There is still another kind of residue which wants to be treated separately, namely, all papers impregnated with silver, such as filters, blotting paper used for soaking up the silver drippings and also fixed prints. These are burnt up completely; the ashes are collected and washed with water, whereby it will concentrate and emit sometimes a strong smell of sulphuretted hydrogen. As soon as this has disappeared it is boiled with crude nitric acid, which will now dissolve the metallic silver formed during combustion. This is repeated as long as a satisfactory quantity of silver can still be obtained from the nitrate of silver solution. It is, of course, also possible to extract the gold from such ashes with the aid of nitro-muriatic acid, but it is doubtful whether it would pay.

My theme is herewith exhausted as far as it is of a purely technical nature and I will add only a few words in regard to the usefulness of those methods. Whoever has time, and particularly during dark days when there is not much to do, will find it to his advantage to personally work the residue. Those who have no time should not make the attempt, as it requires time and labor to insure successful results.

Translated by H. D.

ENGLISH NOTES.

By our Special Correspondent.

Considerable interest has been aroused in photographic circles in England by the announcement of the publication of a new "International Annual," under the auspices of Messrs. Anthony, and edited by Dr. Elliott and Mr. Jerome Harrison. The idea is a most happy one, and a single glance at the list of intending contributors shows that the editors have succeeded in securing the aid of almost every photographer of the first rank either in England on the Continent, or in the States.

A cold and late spring has at length been succeeded by more genial days in June. Cheered by a bright sun—and encouraged by a marked revival in trade, —photographers are more numerous than ever. The end of the winter session has been marked by a serious discussion on exhibitions. The leading society in this country—the Photographic Society of Great Britain—has (it is an open secret) resolved to do away with all medals, etc., at its great October show; and this policy is being somewhat warmly criticised, the general feeling being that, although the "parent society" may possibly venture upon such a step without injury, it would be useless for others to expect our leading amateurs to prepare and send pictures, pay for wall space, etc., without the excitement of a contest and the hope of some tangible reward. I must confess that I sympathize with their feeling myself. A certificate of merit is a great honor, no doubt, but a gold or silver medal seems to drive it home more powerfully, and is certainly, as a mark of honor, worn more easily, understood and believed in by one's friends.

We are looking forward to our new annual gathering, the "Photographic Convention of the United Kingdom," which is to meet at Birmingham during the week July 23d–28th. I am sure that I may extend a hearty invitation to any American brethren then in England, to be present. The list of daily excursions is varied and pleasing, embracing Stratford-on-Avon, Warwick, Kenilworth—in short, every place of note in the Midlands—while the returning excursionists will meet at the Masonic Hall in Birmingham every evening for the reading and discussion of papers.

I have been very fortunate this year in securing a large percentage of technically good negatives from my exposures in the field; and it may be of interest to some of your readers if I detail the plans which have yielded me a better average than I have ever before obtained. In the first place I back all my plates with a solution of asphalt in benzole. This must be made to the consistency of cream and poured on the back of the plate (which may conveniently rest on a piece of red blotting-paper placed on the table); it is not necessary to be very particular; so long as the plate is covered to within half an inch or so of the edges it will be sufficient. This "backing" will dry in a few minutes; it must be removed before development, which can be done by roughly scraping it off with a broad steel chisel; a little left on the glass will do no harm. For this method of "backing" I am indebted to one of the first amateurs in England—Mr. George Bankart—and I can endorse his assertion that it doubles, if not trebles, the permissible amount of exposure, making over-exposure all but impossible.

Then in development, when I have a number of plates to develop, say from three upwards, I invariably use solutions of three strengths. I make up my pyro solution as follows:

Pyrogallic acid	1 ounce.
Sulphite of soda	2 ounces.
Sulphurous acid (saturated solution)	1 ounce.

and add water to make the whole up to 10 ounces. This gives a practically colorless ten per cent. solution of pyro which will keep well.

For Plate No. 1, I commence with the following developer:

Pyro	2 grains.
Potassium bromide	1 grain.
Ammonia (.880)	½ minim.
Water	1 ounce.

I attach much importance to covering the plate well with the developer; using 2½ ounces for a half-plate, and 4 ounces for a whole plate negative.

At the end of three minutes—supposing no signs of the picture to have appeared—I add another half minim of ammonia, and repeat the dose of alkali a second, third, fourth, etc., time (up to the full amount of alkali the plate will stand without fogging), until the picture is fully developed. I then set this (now, strong) developer aside for future use.

For Plate No. 2, I commence with the developer of full strength in pyro and bromide, but weak in alkali, as before. I usually add a second and a third dose of alkali, but there I stop; and, pouring off this developer of medium strength, I apply the strong developer to finish with.

For Plate No. 3, I commence once more with my weak developer, but I do not strengthen it all. Instead of doing this I pour it into a measure, and apply in succession, first, my medium and then my strong solutions.

As the sulpho-pyrogallol remains quite clear (although its color changes to pale red) the three developing solutions now at hand can be used to develop about a dozen plates. A still easier plan would be to use three developing dishes containing the weak, medium and strong solutions respectively; and to transfer the plates from one to the other in turn. Where many plates have to be developed, this is a very expeditious plan.

Finally, should the first plate of a batch give signs of considerable over-exposure—say ten or twelve times what ought to have been given—let the plates have a preliminary soaking in a bath of potassium bromide, 10 grains to the ounce of water.

This is a slow method of development, but it is a sure one. Each plate takes from ten to twenty minutes. But patience is one of the cardinal virtues for the photographer, and a fine negative lost for want of it is a thing to grieve over.

Among books I note that an illustrated English edition of Jerome Harrison's "History of Photography" has just been issued; and the same author announces that he has in hand an elementary text-book; in October, E. J. Wall's new "Dictionary of Photography" will be issued; and Chapman Jones, one of the demonstrators in the Royal School of Mines, has nearly ready a "Science and Practice of Photography." Truly our literature grows apace.

But the camera calls! This afternoon I have promised to join a band of kindred spirits in a raid on an old-world village we wot of. The hedge-rows are glorious with May blossoms; the country is "looking its best"—and the "best" of England in the leafy month of June is the *best* best. At least such is the opinion of

TALBOT ARCHER.

CHLOROPHYL AND GELATINE-BROMIDE PLATES.

BY FRED E. IVES.

[Read before the Franklin Institute.]

THE isochromatic processes now most used are incapable of producing correct monochrome photographs of objects in all colors; eosine and erythrosin plates are insensitive to red, and even cyanine plates will not show any difference between a black and a deep red without greatly over-exposing orange and yellow. The original process (collodion emulsion with chlorophyl) is the only one yet published which has not this defect.

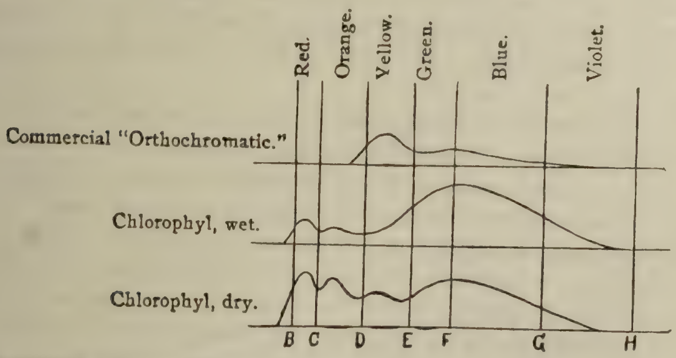
But most photographers do not like to use this process, because suitable chlorophyl cannot be procured at all times, nor preserved without considerable loss of sensitiveness, and the plates must be prepared immediately before use, and exposed wet, in a strong light. Many who have seen the beautiful results obtained with this process have lamented the fact that chlorophyl could not be applied successfully in the gelatine plate process, and I tried many times to accomplish it. On several occasions I obtained considerable color-sensitiveness, but the result was so uncertain as to be puzzling and discouraging. At last, however, I have succeeded in securing, by a surprisingly simple procedure, the full action of chlorophyl upon commercial gelatine-bromide plates.

The degree of color-sensitiveness obtained appears to bear a definite relation to the general sensitiveness of the plate employed, which should, therefore, be of the most rapid kind. They are prepared by flowing with the alcoholic solution of chlorophyl, then drying rapidly, then soaking in water for at least five minutes, after which they may be used at once. With two-year-old chlorophyl (obtained from suitable leaves, at the proper season, and preserved with zinc powder in the solution), the absolute color-sensitiveness is fully equal to that of commercial "orthochromatic" plates, and is so distributed as to be capable of giving far more accurate results; but the blue-sensitiveness, which is reduced by cyanine and erythrosin, is actually increased by chlorophyl, making it necessary to use an extra deep orange color-screen with these plates. This excessive blue-sensitiveness is, in fact, something of an objection to the plates because it is not easy to get a color-screen that cuts off just the right amount of blue light. With screen and exposure that would be exactly right for the commercial "orthochromatic" plate, the chlorophyl plate would be far over-exposed, with five or ten times too much action in the blue and violet. But if the color-screen is deep enough, the resulting negative is perfect for all colors.

For purpose of comparison, I have made one photograph of the solar spectrum on a very rapid gelatine-bromide plate treated with chlorophyl, and another on a commercial "orthochromatic" plate. A yellow screen was used to reduce the action at the violet end of the spectrum, and both plates received the same exposure. The total amount of action below the Fraunhofer line *E* is about the same in both plates, but in the commercial "orthochromatic" is is mostly confined to the yellow, while in the chlorophyl plate it is pretty evenly distributed throughout the yellow-green, yellow, orange and red, down to the Fraunhofer line *a*.

In view of the fact that chlorophyl has been tried with gelatine-bromide plates a great many times, and in various ways, without definite success, the most surprising thing about this method is its simplicity.

Since obtaining these results I have read a very interesting paper by Captain Abney, in which he calls attention to the fact that cyanine and erythrosin will impart color-sensitiveness to a commercial gelatine-bromide plate when merely applied to the surface, as by flowing the plate with collodion or varnish in which a little of the dye is dissolved. He concludes that contact of the dye with the surface molecules of bromide of silver in the plate is all that is required to secure color-sensitiveness, and suggests that chlorophyl should therefore succeed with gelatine-bromide plates if merely applied in that way, or in alcoholic solution. It will not; the subsequent soaking in water is essential to the production of color-sensitiveness.



Action of solar spectrum on commercial orthochromatic and two-year-old chlorophyl gelatine-bromide plates, through light-yellow color-screen.

Later Experiments.—Since the above paper was read, exposures have been made upon dry plates with the following results: The color-sensitiveness proved to be about three times greater than before drying, and the blue sensitiveness considerably less. The dried plates invariably fogged, and it was necessary to use a brush to prevent the formation of air bells and force an even action of the developer.

Experiments with Erythrosin and Cyanine.—The discovery that chlorophyl would act so well when applied in the above-described manner, suggested the idea of trying other color sensitizers in the same way. Plates were therefore prepared with erythrosin, by flowing with alcoholic solution, then drying, then washing or soaking in water. The result was a great surprise. Although not a trace of ammonia or silver was used, the plates showed several times more absolute color-sensitiveness than the dried chlorophyl plates (but all in the yellow and green), and about ten times more than the commercial orthochromatic plates. They work clear and brilliant, and are sensitive enough for portrait work with the yellow screen.

Cyanine was then tried in the same way, and gave even more remarkable results than erythrosin. Without reducing the blue sensitiveness in the least, it made an extra rapid plate as sensitive to the orange-red, orange and yellow of the spectrum as to the blue, and as sensitive to the green as to the violet. The absolute color-sensitiveness is many times greater than was ever before produced by cyanine, and ten times greater than has been produced by chlorophyl. The first plates that were prepared in this way gave only a mass of fog; the successful plates were washed and developed in total darkness.

One very important fact, discovered in the course of these experiments, is that the action of the dyes, by whatever method applied, is at least three times greater on some commercial plates than others. The best plates I know of have a full allowance of bromide of silver in a very thin film of gelatine.

A NEW DEVELOPER — HYDROXYLAMINE AND PYRO.

BY CHARLES L. MITCHELL, M. D.

[Read before the Philadelphia Photographic Society.]

Within the past few months considerable attention has been directed in photographic circles to hydroxylamine, a new chemical, and claimant for a position in the ranks of the developing agents. Attention was first called to it by Professor Eder, in Dingler's *Journal* for 1887, p. 225, who recommends the following method for its use:

(*A*) Hydroxylamine chloride 1 part, dissolved in alcohol 15 parts.

(*B*) Caustic soda 1 part, dissolved in water 8 parts.

For use, mix 3 to 5 parts of *A*, and 5 parts of *B*, with 60 parts of water. This formula, however, when tested by other observers has been found to be very unsatisfactory, the powerful action of the caustic soda causing blistering and reticulation of the gelatine film of the photographic plate, while if a weaker alkaline combination is used, such as the carbonate, no image can be evolved.

In the January number of *The American Journal of Photography*, Mr. J. G. Cassebaum, a member of this society, called attention to the value of hydroxylamine in combination with pyro as a developer, not only for negative plates, but also for transparencies and lantern slides, claiming that it produced a wonderful clearness in the shadows and brilliancy in the higher lights, and gave a beautiful bluish-black tone, rich in gradations and soft and pleasing to the eye. The addition of hydroxylamine to the developer also acted as a preservative, keeping the pyro solution clear and active for a long time. Mr. Cassebaum's results have been corroborated by Mr. J. H. Stebbins, of New York, in a paper published in Anthony's Photographic BULLETIN, p. 141, 1888. While I, therefore, cannot claim anything particularly new for the subject I propose to discuss this evening, I desire, briefly to show what can be done with this new agent, and to offer a few suggestions for its proper use. Before going into further details, however, let us look for a moment at the chemistry of hydroxylamine.

Hydroxylamine, represented by the formula OH, NH_2, is a combination of hydroxyl (OH) the radical of water, and the univalent radical amidogen (NH_2). It was discovered by Lossing in 1865. It is a very volatile and easily decomposible base, and can be obtained only in solution. It is formed when ethyl nitrate is acted upon by tin and hydrochloric acid, or by the action of hydrochloric acid on tin and ammonium nitrate; also by the action of sodium bisulphite and nitrite of sodium with solution of potassium chloride. Hydroxylamine is really an ammonia in which hydroxyl (OH) has been substituted for one atom of hydrogen.

$$N\left\{\begin{matrix}H\\H\\H\end{matrix}\right. \qquad\qquad N\left\{\begin{matrix}OH\\H\\H\end{matrix}\right.$$

It forms definite salts with the acids, and its combination with hydrochloric acid, hydroxylamine chloride, is the salt which has been used in recent experimentation.

Hydroxylamine chloride is found in commerce in the form of beautiful, colorless, transparent tables, very much resembling nitrate of silver crystals, only possessing rather a more waxy appearance. It is quite soluble in water, moderately so in alcohol, and although more stable than its base, is still gradually decomposed by the action of light and air, and hence should be kept in a closely stoppered bottle and excluded from the light. Its photographic value resides in its avidity for oxygen, it breaking up again into water (OH_2) and hydrochloric acid. It is a great reducing agent, and hence is especially valuable for photographic work. There are several makes of hydroxylamine chloride at present in the market, some of which are much discolored and impure. I am indebted to Mr. F. H. Rosengarten, of Rosengarten & Son, for that which I have used in my experiments, and have found it to be very pure, and of excellent quality.

When combined with pyrogallol, hydroxylamine chloride exerts a double action. First, by its absorbtive capacity for oxygen it serves to partially protect the pyrogallol from decomposition, and secondly, when mixed with the alkalies or their carbonates in the process of development, a certain quantity of chlorine is liberated, which combines with a certain proportion of the alkali to form an alkaline chloride, which salt exerts the same retarding influence on the development as do the alkaline bromide salts. It is even probable that its action may be better than that of the bromides for preserving detail and keeping the shadows clear, as the quantity of the salt formed is quite small, its action takes place gradually and progressively, and the chloride formed is in a nascent condition when its modifying influence is exerted.

During the past two months I have made a quite extensive use of this combination of pyrogallol and hydroxylamine chloride, not only as a developer for negatives, but also for developing transparencies and lantern slides, and I can fully corroborate the excellent results which have been obtained by the gentlemen previously mentioned. As an "all round" developer it excels anything

I have ever used, and is equally good for negatives or positives. It works with sufficient slowness to admit of the finest detail being obtained, and gives the most beautiful, clear shadows and brilliant high lights. It seems almost impossible to fog a plate in development when this mixture is used, and I have carried on development for a half hour, and until the back of the plate was almost as dark as the front, and yet, after washing and fixing, the negative or positive would be very dense, of course, but still very clear and brilliant.

The formula I have used is a slight modification of that recommended by Mr. Cassebaum, and is as follows:

No. 1.

Hydroxylamine chloride	30	grains.
Pyrogallol	240	“
Water	1	pint.

No. 2.

Sodium carbonate, crystals	1½	troy ounces.
Sodium sulphite	4½	“
Water	1	pint.

To develop take of No. 1, from one to two fluid ounces, No. 2, one-half fluid ounce, water four fluid ounces, flow over the plate, and if the image does not appear within 30 to 40 seconds, add more of No. 2 solution, in small portions at a time, until development commences. This is only offered as a general outline of the method of development, for each plate must form a study by itself, according to character of subject, time of exposure, etc., and the above proportions varied accordingly. No iron-clad system can be laid down for this.

The use of the sodium sulphite in this formula seems to be mainly in preventing the discoloration of the liquid during development. It may also act as a slight retarder of the chemical action, but such action is very slight. It does, however, materially affect the color of the liquid, for when a solution of the sodium carbonate alone is added to the pyro mixture, the liquid darkens very rapidly, much more so than when the sulphite is also used. With the latter mixture I have developed a dozen lantern slides, using the same developer for all, and after the last plate was finished the developer was but of a moderately light orange color. The mixture of the pyro and hydroxylamine chloride seems to possess remarkable keeping qualities. This bottle which I now show you contains a mixture made up two months ago, and as you see it is not as yet very dark, although it has been exposed to a strong light, and is, as I found out by testing it to-day, fully as active as when it was first made up. I am inclined to think, although as yet I have not had the opportunity of practically testing it, that the mixture will keep still better if the sodium sulphate is mixed with the pyro and hydroxylamine salt, instead of being added to the sodium carbonate. I shall try this combination shortly, and report its results to the society at some future time. A point here which I wish to make in regard to keeping not only this but all other pyro mixtures, is the use of amber glass bottles and rubber corks, instead of the ordinary white flint bottle with a wooden cork. The amber glass prevents the actinic rays of light from penetrating to the contents of the bottle, and the rubber stopper is much superior to the woody cork, which soon blackens, rots, and contaminates the liquid which it confines.

A few months ago I had the pleasure of calling the attention of the members of this society to a method of silver printing on plain paper, by which very beautiful results could be obtained. To attain the best results, a negative is needed which possesses considerable "snap," as it is technically termed, and this pyro and hydroxylamine developer produces the best negative for making the prints of any developer that I have yet used. The contrasts of light and shade are beautifully brought out, and while perfectly clear, are still soft and pleasing.

In conclusion, as "the proof of the pudding is in the eating of it," I beg leave to submit for the inspection of the members this evening, several negatives made with this developer, a series of plain silver prints made from them, and also a number of lantern slides developed with hydroxylamine and pyro. These will illustrate in the most practical way the character of work which this new developer is capable of, and I trust may serve to interest other members in still further "developing" the merits and uses of this valuable agent. One series represents a negative and a lantern slide from the negative, both developed with the same combination of hydroxylamine and pyro. I also show a lantern slide of the same subject prepared with a hydroquinone developer for purpose of comparison.

THE REPRODUCTION OF NEGATIVES.

BY W. H. RAU.

[Read before the Photographic Society of Philadelphia.]

COMPARATIVELY few photographers seem to appreciate the value to be derived from the successful working of a process for the reproduction of negatives. Many believe a reproduction cannot be made to equal the original. My experience has satisfied me that with care and judgment negatives can be made that are as *good*, and in some cases, better than the original.

Supposing a rare and valuable negative is on thin glass, and needs a large number of prints made from it, and the owner will not risk the only negative he has. Neither can an edition be made ready in time for a publication. Again, a negative is too thin and flat—made in bad whether—is full of detail, but lacks brilliancy, would not care to risk an intensifier, bearing in mind the stains that may result, besides which intensifying would not make it any more brilliant. This can be reproduced and a brilliant negative result. A small negative is to be enlarged, or a valuable negative is broken and cannot be made again. Even this can be successfully reproduced.

At different times a knowledge of how to make a negative from a negative has been of great value to me. In 1881 and 1882, during a six months' sojourn in the Orient, I duplicated all subjects made while in Egypt, but on reaching Arabia and Palestine, plates were getting scarce, and only one plate was used on each subject. Many exposures were made under unfavorable conditions in rain, cloudy weather, etc., as an itinerary had been mapped out, and a certain amount of country had to be gone over each day, and views had to be made under all conditions, good and bad.

Nearly all of these I reproduced on my return, and will show you to-night some of the results, with a print from the original plate and one from the reproduction, side by side. Only recently I came into control of a large collection of plates of India, some of which were made high up in the Himalayas, many miles from a railroad, where travel is expensive and difficult. A few of the choicest plates were cracked and broken. Some of these which had no chipped edges, but were broken clean, I have reproduced. Sometimes a reversed negative of a choice subject is wanted for some photo-mechanical process.

Having briefly outlined where reproduction is a help and a necessity, we will take up the first part of the process, that is, the making of the positive. Having carefully studied the character of the negative, its color, unevennesses, dense portions, etc., carefully clean the back, and have ready a deep printing frame, a size larger than the negative. Have in this a piece of crystal plate glass, free from bubbles and scratches. Then arrange the negatives in the center of the frame, being careful to brush away with a blender all filaments and grit, and place the plates to be used for the positive face down in contact with the negatives. Place a dark pad on this, and put in the back, and gently press the springs into position. All is now ready for the exposure, which I have always made with a Carbutt lantern, measuring about eighteen inches from the side of the lantern, and making a mark, using the oil lamp, as I found this the most regular and reliable, as is can be turned up to nearly the same brilliancy each time of using. The time of exposure varies of course with the density of the negatives and the rapidity of the plate used. I prefer using a slow plate for the positive, one that will develop with ferrous oxalate, such as Carbutt's *A* or *B* plates, unless a very dense negative is to be reproduced. I have used recently on dense negatives some Belgian plates that were rapid, also a few Seeds, 22 to 25, as they develop a fine gray color with the ferrous oxalate. I also prefer using a plate a size larger than the negative, in this way avoiding thin edges. Should the negatives be of average good density, about 30 to 40 seconds will be the right exposure with an *A* plate. If one end of the negative is thin, shade this by moving between it and the light a cardboard, cut to suit the unevenness. If certain portions of the center are dense, cut a round hole in a cardboard, and move this in front of the plate and the dense portions, and keep it in motion, giving the necessary extra exposure to bring up the detail which might otherwise be lost.

Having properly exposed the plate, mix a developer, consisting of 8 parts of oxalate of potash (saturated) solution to 1 part of iron (also saturated), and 20 drops of a 20-gr. solution of bromide of potassium. The image will, of course, appear slowly, but will build up with an evenness that is essential to success; this should be continued until the image is entirely covered, even the highest lights, so that all detail in every portion of the plate is brought out, then wash and fix it as usual.

The weak developer well restrained gives a soft, even, gray image, full of detail, without too much vigor. In case a thin, flat negative is used, use an *A* plate, and place the frame 36 inches from the light, and expose proportionately double what it would be at 18 inches, and get as much brilliancy as possible in the development; sometimes, when the original is very flat, ending with a developer consisting of oxalate of potash 4 parts, iron 1 part, which will give it snap and vigor. Should it be the intention to enlarge the resulting negative, the positive for this purpose should be less dense than for contact use.

Having dried the positive, carefully spot out any pinholes with a fine pointed brush, and do any other retouching the picture may need, such as strengthening dark portions, etc. Any scraping away of objects not wanted should be done on the positive, such as a crack from a broken negative.

I have with me a positive made from a broken negative, which was in three pieces, and one corner entirely gone, broken en route from India. I carefully laid the pieces together in a printing frame and brought them in close contact, then placed the plate, a size larger than the negative, in position, and during the exposure moved the frame slowly from side to side in front of the light, to lessen any shadow which might be thrown by the crack. I placed this positive in the hands of Mr. H. Parker Rolfe, a member of this society, who has obliterated the cracks, removed a cow which had strayed in on the edge of the picture, and filled in the corner, which was a blank.

The making of the negative is next in order, and I proceed to make the exposure the same as in the positive, supposing the negative is to be the same size, and used for silver printing and ordinary purposes. Should the reproduction be wanted for use in phototyping, photogravure, or any of the processes requiring a reversed negative, then the negative must be made in the camera, placing the positive in position with the film side turned from the lens. Where enlarged negatives are intended, they must be made in the camera, with a short focus rectilinear lens, or a camera with a very long draw. Experience alone will give you the proper time of exposure. It will vary with the density of the positive and the rapidity of the plate used. Here, as before, in making the positive, judgment should be used in measuring the distance from the frame to the light, as a dense positive can be brought to 15 inches, and a very thin one as much as 36 inches, from the light. In this part of the process I use pyro developer in preference to oxalate, although the Oriental subjects which I will show are all made, both positives and negatives, with ferrous oxalate on Carbutt's *A* plate. But I find, since making them, a better knowledge of developing has been gained, and the results with pyro are surer than with iron.

I generally begin the development as if the plate were overtimed, using a weak soda and pyro, with a trifle of bromide, and adding soda or pyro as the subject and conditions may suggest. The development is similar to that of an ordinary exposure made in the camera. One must notice the detail, the general appearance and progress, the same, if the result is to equal an original negative. I have found that the most difficult part in the process is to secure a positive of the proper density and color. It must be rather over-exposed, and gray in color, with all detail apparent without straining the eyes to see it. I always judge the density by daylight, and never use a positive that is yellow, as it is very deceiving in its density, and usually gives an unsatisfactory result. While I admit there are negatives that cannot be well reproduced, I believe they are the exception and not the rule. Hardness or chalkiness is likely to occur to the beginner, as he is apt to make the positive brilliant in all cases, when really this is not necessary, excepting where a weak, flat negative is used.

Cleanliness, freedom from dust, and good judgment combined with skill in development, are necessary to obtain the best results.

ON INCREASING AND REDUCING DENSITY IN GELATINE NEGATIVES.

BY JOHN BARTLETT.

[Presented at the meeting of the Society of Amateur Photographers of New York.]

THERE are so many variables in the problem of successful development, that surely there can be no compromise of one's reputation by a candid avowal of a liability to err at times in judging of the proper density of a gelatine negative before fixing.

The personal equation may lead one to fall to either side of the line of photographic perfection. The deflection, it is true, may be only slight, but the consequent lack of vigor or loss of half tones on the negative, after emerging from the hypo bath, naturally causes a regret for the failure to attain the proper limit of the development process. At such times recourse is gladly had to some of the methods for restoration of the lost virtues.

As a prophylactic some have recommended a kind of inoculation of the negative, giving it the very disease dreaded—carrying the intensification in the development to a degree considerably beyond the known point of proper strength, and then resorting to a process of reduction, after fixing it, to obtain the intensity required. But such a plan is wrong in principle; intensification and reduction should be employed only as remedial agents. However, we have found that the *similia similibus curantur* plan may be advantageously pursued with intensification after fixing.

Of all the methods of intensification perhaps mercury followed by ammonia is most generally employed, but by the method usually followed we are obliged to take whatever degree of strength the mercury may give, so that frequently the negative is made too dense to yield good prints.

The following modification will enable the operator to check the degree of intensification when the proper gradations are obtained. The negative is first immersed in a preliminary reducing bath composed of:

Per-chloride of iron (cryst)	120 grains.
Citric acid	240 "
Water	32 ounces.

The object of which is to thoroughly clear up the shadows, and to remove any slight traces of fog which, if allowed to remain, would go on increasing, with the intensification and the last state of that negative would be worse than the first.

The negative is allowed to remain only a few minutes in the bath, which, as we have said, is a powerful reducer, and would totally obliterate the image if the action were long continued. The solution of per-chloride should be rather weak; perhaps it might be better to recommend 50 ounces of water to the above proportions. On removal from the reducing solution the negative is well washed under a tap, then transferred to the bi-chloride of mercury solution, which may be of any strength from 10 per cent. to saturation. The bi-chloride is difficult to dissolve; a little chloride of ammonium is often added to facilitate solution.

After the film is well bleached it is again thoroughly washed, and placed in a bath of ammonia and water. One dram of ammonia to 4 or 5 ounces of water is quite strong enough. Should the negative now be found to have attained to too great strength, all that is necessary to reduce its obduracy is to reimmerse it in the per-chloride of iron and citric acid solution, and to watch until the graduations of light and shadows are properly represented.

The resultant negative will be found to have greatly improved in appearance and to possess good printing qualities, and probably less liability to change than others mercurialized by the usual method; the per-chloride of iron destroying any trace of hypo which might be present in the film despite the best washing of the plate.

In all processes of intensification and reduction, the cheif aim should be to preserve the relation between the lights and shadows in the negative.

It frequently happens that a method of ifntensifiction, though vigorus operanes unequally upon the film, giving the allophitic dose to the high lights, and the homeopathic to the shadows, just where strength is most needed. A negative so intensified may be relieved of its former flatness, but the hardness produced is even more objectionable.

To secure by intensification all the fine but latent gradations which the exposure has impressed upon the film, or in other words to produce an equilibrium of light and shade, the plan of intensification which Mr. John Cassebaum and myself proposed more than a year ago will be found most admirable.

No method known excels in simplicity the silver method, but hitherto the great drawback to its employment with gelatine negatives has been, not only the liability to stain the film, but also the tendency to fog the negative.

Its action must be controlled by a previous operation upon the plate, and here comes in the favorable influence of the per-chloride of iron solution in preventing both stain and fog.

A thorough fixing and total elimination of the hypo from the film is absolutely essential if any success is expected with silver intensification.

Per-chloride of iron here comes to our aid, destroying any last trace of this persistent salt.

The negative to be intensified is placed in a bath composed of

Per-chloride of iron	4 grains.
Citric acid	4 "
Water	1 ounce.

In warm weather 2 grains of chrome alum should be added to prevent frilling, but we would rather dispense with it when possible. The plate when in the iron should be kept in motion to secure evenness of deposit.

A few minutes is sufficient to clear up the negative, after which it is thoroughly washed, and subjected to the gallic acid and silver bath, which, having a substructure of chloride to work on, builds up rapidly and evenly, of rather, we should say, the effect of its action is more visible in the weaker parts of the negative, owing to the deposit of the per-chloride of iron acting upon the whole of the film.

Eighty grains of gallic acid are dissolved in one ounce of alcohol, and the solution kept until all turbidity subsides.

Glycerine may be substituted for the alcohol. Care must be taken to secure a ood quality of gallic acid, as upon its purity everything depends.

Next 30 grains of nitrate of silver are dissolved in 1 ounce of distilled water, and after a good sunning filtered from sediment.

To prepare the intensifier for immediate use take

Silver solution	1 dram.
Gallic acid solution	1 "
Water	1 ounce.

Place the negative which has been subjected to the iron solution in a scrupulously clean dish (glass is preferable to rubber), and pour over it the intensifier, keeping the dish in gentle motion to insure uniformity of action on the film.

The negative will tone up gradually. When the desired degree of intensity is secured, the plate is thoroughly washed, and finally dipped in weak hypo solution; again washed, and the operation is complete. The intensity should not be carried too far, because on drying the strength will be found to be greater than it appeared in the wet film. However, the power of the reducer is at hand. All that is necessary is to place it in the per-chloride of iron solution until the proper degree is restored.

Should a slight opalescence appear upon the surface of the film on placing the negative in the silver, it is an indication of insufficient washing from the iron bath. It is not serious, however, and may be generally rubbed off with a piece of wet cotton, and will disappear entirely in the hypo.

The negative should not lie too long in the per-chloride solution; as the action is best when confined to the surface of the film.

This method of intensification with silver is not a mere staining of the film with an adactinic color, but a genuine building up of the image, a superposition of a new image upon the basis of the old one.

It has been in use now for more than a year, and in the hands of careful and cleanly manipulators, has given great satisfaction. As to the keeping qualities of the negatives so intensified, we shall simply say we have exposed samples to a strong northern light for nearly twelve months without finding any signs of deterioration.

A word, in conclusion, about dense negatives.

There is a peculiarity of gelatine plates which makes them a favorite with me; that is, the extraordinary softness obtained with slight over-exposure, and the wealth of detail in the deep shadows; sometimes, it is true, almost latent, yet capable of being brought forth by judicious treatment.

True, the softness may sometimes degenerate into flatness, but I would be inclined to err rather on the side of softness than in the direction of harshness.

In developing a fully-timed plate, we notice that high lights come up first, then the middle tones, and lastly, the deep shadows. The high lights, therefore, as a matter of course, have a deeper deposit than the feebler illuminated portions. Sometimes the contrast between the high lights and the deep shadows is too great, and we feel anxious to apportion the deposit more fairly. We have recourse to reducing agents, but here we must exercise care.

A chemical which acts uniformly upon the high lights and shadows would not much improve the condition of things; the shadows would go altogether while the high lights were reducing.

A very weak solution of per-chloride of iron acts first upon the high lights, without affecting the finer details of the shadows.

The best plan is to immerse the negative in a weak solution,

Per-chloride of iron	30 grains.
Citric acid	60 "
Water	1 pint.

for a minute or two, then wash and pass rapidly through hypo solution, ordinary strength. Be careful not to let the plate remain in the hypo more than a few seconds, as the reduction is very rapid.

The operation may be repeated as often as is necessary, so that the exact degree can be obtained, and the operation stopped at once.

If a strong solution of iron is used, the shadows suffer, the action taking place uniformly on the whole film; but, if a weak solution is employed, the high lights are attacked first. So that really, if judiciously used, the per-chloride of iron may be made to improve the flatness of a badly developed negative, if used strong giving it more brilliancy by making a greater contrast between the lights and shadows.

OUR ILLUSTRATION.

WITH this issue of the BULLETIN we give our subscribers an admirable example of the work of one of the most progressive photographers in America, Mr. G. M. Elton, of Palmyra, N. Y. Mr. Elton has received a great many gold medals for his fine work at the various exhibitions where he has shown his pictures, and his fame is not confined to the American Continent, for he has recently received a medal from the Photographic Society of India, held at Calcutta. The beautiful "Study in Posing" that forms our frontispiece is an example of the kind of photographic work that he takes pleasure in producing. Should it contain suggestions for others, no one will be more pleased than Mr. Elton.

AN OLD PHOTOGRAPHIC CLUB.

BY COLEMAN SELLERS, E. D., M. INST. C. E.

(*Continued.*)

IN the club, the champion of dry plate photography was Mr. Eugene Borda; but before sketching his life as a photographer, we would say a few words about one of the portable tents that were so strongly recommended by their inventors. Mr. Fassitt had his tent mounted on a wheelbarrow, and this tent was trundled about until one day he came across a gentle horse, and a wagon that had a trunk-rack on the back of it. This was a great piece of good luck. He would stop the horse in midroad, and standing back of the vehicle, would work with comfort in his dark tent that covered the upper part of his body but left his legs free. The plan worked so well that he in time did not tie the horse. One day in a sunny road the horse took a notion to seek the shade of a wooden bridge near by. He came to this conclusion while Mr. Fassitt was in his tent with a charming negative of the bridge nearly done. Kind readers, those of you who know Mr. Fassitt can imagine the sound of the smothered exclamations that came from under the black cloth while the poor operator was following the vehicle in a sort of slow trot, not knowing when or where the horse would bring up. It is well for us that Mr. Fassitt is kind enough to tell his friends about his adventures, even going so far as to tell how he spent one whole afternoon trying to develop an extra ground glass that he had carried afield in a package of dry plates. He said, he "could not tell why in the mischief he could not get a sign of an image on it," not finding out the trouble until he had put it aside to dry, after vainly trying to clear it in hypo.

Mr. Eugene Borda is a native of France, the grand-nephew of the great mathematician, Jean Charles Borda, who figured so prominently among the great savants of the end of the last century. The letter asking Mr. Borda to become a member of the Exchange Club found him at his then home in Schuylkill County, in Pennsylvania, where he directed his own coal mines. We have but to open a little box containing stereoscopic pictures and bearing on its cover the one name, Borda, to see his surroundings at that time as he saw them; while among our own pictures we can find some that show what we saw when we paid a visit to our fellow-member at that country home. The sun shone bright that day, the few clouds serving to add to the beauty of the landscape as they cast deep shadows over the far-off hills, shadows that chased each other, now darkening the woods, now casting a shade in the valley. Merry children played about, their bright faces rosy with health, making an attractive foreground to the pictures either seen or taken, during that too short visit. The little ones paying little attention to the photographic talk that occupied the attention of two enthusiastic amateurs at their first meeting.

Mr. Borda's camera sent attractive pictures—pictures that showed care in every one of the steps from the clean glass plate to the silver print neatly mounted. His education fitted him for careful research. He contributed to the current photographic literature, and was the ardent advocate of the dry processes that were then beginning to attract attention; he, over the name of Siccus, contending with the advocate of the wet collodion, there being more than one follower of Humidus in the contest that gained for Mr. Borda the name of the fighting member. He came by this legitimately, having borne his sword in his country's trouble in 1848, when both in February and June, as captain in the staff of the National Guard, he participated in many of the struggles, which ended in the death of the Archbishop of Paris and the surrender of the insurgents, after General Lamoricière made an opening to the troops in the Faubourg, St. Antoine, by blowing up the houses and barricades which stood at the entrance of it. We confess to a fondness for accounts of the stirring history of France, whether told under the guise of fiction by Dumas, or of events seen by our Borda. He directed his mines in turbulent Pennsylvania before the labor troubles were settled and the noted "Molly Maguires" were taught their lesson. A residence among the hills at that time had little attraction, even when the directing mind of the district had tact and good judgment. In 1862 he moved with his family to Philadelphia, where he resides at present. He can be found in the marts where operators in coal mines do congregate, and he is still interested in coal and coal mining. The earth does not give up its treasure of stored-up energy without a struggle, and yields its treasures most willingly to the scientific engineer. There is no mineral contributing so largely to the comfort and happiness of the human race as coal. It represents the stored-up energy of the prehistoric sun that beat on the forests and fern brakes of an earth not yet ready for man, eons of years before the human race began to cultivate its surface. The coal that now warms our winter homes; the coal that sets in motion the machinery that makes modern civilization attainable; the coal that gives us light in the night, in the hands of the chemist is now giving us more than the wildest imagination could have dreamed of. It has given us the brightest dies, the most valuable drugs; it gives us light to help in the photographic art, and it has furnished some and soon will furnish more of the chemicals needed in our dark rooms. The madder fields of Germany are utilized for other culture; the madder product from coal oil has taken its place. We are even told that the time is not far off when the sugar cane will be abandoned for that product of coal that is to be three hundred times sweeter than the best sugar from the South. The ardent photographer who plies his art with a desire to learn recognizes in the power exerted to-day by the sun's rays the same power that laid the coal beds of the world in the bosom of the earth, when it beat on the now unknown rank vegetation of the ages long ago.

As to the good that can be obtained from the practice of photography by amateurs, apart from the pleasure it gives to the operator and his friend, some may in time find it to their advantage to turn the art into profit by following it for a living. The amateur who does good work can only do so by and through habits of neatness and great care in all his manipulations leading to exactness. It will lead him to investigate the laws of nature that govern the physical as well as the chemical needs of the art. His eye is educated in habits of observation. His art education is advanced. If he will try to make some of the little conveniences he needs, in place of buying them, he will in time be a workman with the tools needed. Man is better than the beasts of the fields, by reason of his hands, that enable him to master all things. It is but right and proper that much attention shall he given to the education of these hands in the manners that the education of his brain conducted—by practice and use. It is certain that the introduction of manual training into the public schools has proved that the co-education of the hands with the head makes the brain better fitted to take in knowledge. We have on our mind's eye now one of our recent acquisitions in our exchange list. Mr. Theodore N. Ely, the Superintendent of Motive Power of the Pennsylvania System of Railroads, began to photograph about the time we took up our camera again after a long separation from it. Mr. Ely is a very skillful photographer, carver, and in parts handy with tools of all kinds; he is neat and precise in all his operations. He uses his pencil with skill. All these little things, mere matters of pastime apart from and outside of his official duties, are of direct benefit to him, and make him more useful to the railroad company that employs him. The refined taste shown in the new cars on the Pennsylvania System of Railroads alone bears testimony to the education of the officer in matters of art. When last year Mr. Ely went to England to study the railroads of foreign lands, he took with him one of Anthony's detective cameras, and he has many 4 x 5 pictures to help him to remember what is of use to him. The part the photography plays now in the mechanical arts, would take a volume to describe. It has become the means of copying drawings in all large and many small machine shops. An engraving may flatter in describing a machine. A photograph shows us the thing as it is, and is next in value to seeing the workmanship itself.

We are sorry it is not in our power to give the names of all who took part at one time or another in the first Amateur Exchange Club. Besides the names given in the first list of the club, there was in a later list John M. Masterton, Charles de Rham, James Hunter, Dr. William Mead, Dr. John Dean, of Boston, he who wrote the Smithsonian paper on the nerves, illustrating it with microphotographs of sections of the *medulla oblongata*. Dr. Leeds, who had in 1863 just returned from Mexico with a fine lot of tannin negatives. Later Mr. Titian R. Peale, of Washington, introduced Rev. Dr. Charles H. Hall. Hugh Davids came into the club, making 8 x 10 pictures, and soon after nearly all the members gave up their stereo cameras and took to larger sizes. T. H. Bretterton, of Pittsburgh, joined at the same time. The name of Henry T. Martin, of Albany, N. Y., was the last name given to us. In September of 1863 we were told that we could get the new salt, double sulphate of iron and ammonia, ready for use, from Messrs. E. & H. T. Anthony, so we know that the two brothers had become partners, but as yet without any company to the end of the name.

Among the societies advertised in the journals of the day there are some organized for exchange. To these the history of the old club may be of interest. Such a club was the more valuable when the means of obtaining information were more limited. When there were fewer persons interested in photography outside of the profession. To-day there are places in our great cities where in the limit of a few blocks about the house of any one, more amateurs can be found than were then to be found in the whole of the United States. At the present time there are two kinds of exchange clubs worth organizing. A local one where the members can meet and talk. One formed by careful selection from men or women, or both, who are far from each other; each being surrounded with subjects not available to the other, can exchange to great profit. Small international exchange clubs have a special charm. We would like to exchange our surroundings in the new civilization of the western continent with the amateurs who can send us old castles rich with the history we are familiar with. To organize such clubs we can have access to amateurs abroad through the journals of the day. · Two or three gathered together in this country can advertise for others to join then in exchange from other countries. Anthony's BULLETIN will help in this, but if Mr. Anthony carries out a project of an international publication that has been hinted at, then we Americans have the means at hand to form pleasant foreign connections in exchange. Many years ago, when Captain M. C. Meigs was superintending the extension of the Capitol buildings in Washington, he saw at the house of Mr. T. R. Peale, the pictures of the Exchange Club. To one member he sent some pictures he had himself made, saying they were in return for much pleasure of sight only. The member to whom he sent those few prints of what Captain Meigs seen in and about Washington, replied, sending pictures in return. Captain Meigs was advanced to the high post of Quartermaster-General of the United States by the lamented President Lincoln. Those pictures sent to him in return for ones he had only seen began a warm friendship that has never grown cold.

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CENTRIFUGAL FORCE APPLIED TO EMULSION MAKING.

BY ANDREW PRINGLE.

[Read before Camera Club Conference.]

(*Continued.*)

IN the dark room it is not always easy to say when the whole of the deposit is removed, and a rapid emulsion will probably be more consolidated and more difficult to remove. One of the strong points of the process is that we have only a known quantity of silver haloid, a known quantity of gelatine, and a known quantity of water to deal with, so that our emulsions my be made always alike—in these respects, at least. The bulk of gelatine is soaked in the required quantity of water, and that water is measured beforehand and used later as the solvent of the entire emulsion. No silver goes down the sink, for any minute quantity washed accidentally out of the drum is added with the rejected liquid to the residues. I once separated an emulsion containing precisely 125 grains of silver bromide. After separation, I kept the liquid, decanted, dried, weighed the precipitate, and found less than 1 grain, and some part even of that must have been nitrate.

The Chairman said that he had some experience in separating emulsions, although he had used much ruder machines than the clever instrument then under discussion. On the whole, however, he was not in favor of separated emulsions, as he considered there was a decided alteration in their quality. But, of course, when an emulsion gave red or green fog, there was nothing for it but to separate; and, for scientific purposes, it was certainly most useful, and he was quite determined to make a closer acquaintance with Mr. Pringle's separator, which he considered most excellent for amateurs' use. He would ask the meeting to give Mr. Pringle a hearty vote of thanks for introducing it to their notice.

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E. & H. T. ANTHONY & CO., Publishers.

CHICAGO LANTERN SLIDE CLUB.

THE regular meeting of the club was held at the Art Institute, Tuesday evening, June 26th, *President* NICOL in the chair. After the reading of minutes of the previous meeting, nine new members were admitted. The club now has several lady members, and they are contributing some excellent slides.

A communication from Mr. George Bullock of the Cincinnati Camera Club, was read, with a request that our club cast its vote for a manager and two assistants for the American Lantern Slide Exchange. A pleasant discussion resulted in a unanimous vote for the Past-Director, Mr. Bullock as Manager, and Mr. F. C. Beach, of New York, and Mr. W. A. Morse, of Chicago, as assistants. The Secretary was instructed to remit to the Manager the dues, $10, and report the vote of the society. Dr. Nicol then called the attention of the members to the immediate need of a good lantern as club property.

It was decided to open a subscription list and as soon as the proper amount was secured to appoint a committee and have one made to order suitable for either large or small hall. Dr. Garrison kindly offered to contribute the blow-pipes necessary, and guaranteed them to be of the best possible construction.

The Secretary then referred to the London Camera Club's night at Apollo Hall, and the oft-repeated satisfaction of members with the entire exhibition. Dr. Garrison moved that the club pass a vote of thanks to the London club for the exceedingly interesting set of slides and the enjoyment of the evening. Mr. Morrill seconded this motion, and it was unanimously passed. Also that an honorable mention of the event be made on the records of the club.

A set of astronomical slides having been presented the club by Professor E. C. Pickering, of Harvard College, a vote of thanks was also extended that gentleman. While the lantern was being lit, Dr. Nicol gave a neat little demonstration of cutting dry-plate glass in the dark room to any size desired.

An enjoyable study of slides followed. Mr. Morrill showed a beautiful portrait of a little child, also a river scene at Clark Street Bridge with good cloud, smoke and steam effects. Dr. Matteson had some excellent flower slides, including orchids from the noted collection in Mr. Chadwick's conservatory. Mr. S. W. Fallis showed a good view of old Chicago about 1830, when old Fort Dearborn was at the river's mouth.

During July and August our club dispenses with the monthly meetings, and expects renewed interest and good slides from summer trips.

W. A. MORSE,
Secretary.

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

A SPECIAL meeting was held Wednesday evening, June 20, 1888, for the purpose of taking suitable action in regard to the sudden death of Mr. S. Fisher Corlies, late Treasurer of the society.

The *President*, Mr. FREDERICK GRAFF, occupied the chair, and briefly announced the object of the meeting.

In addition to an intimate personal friendship with Mr. Corlies, he had been associated with him as a member of this society since the date of its organization in 1862. He had also known him intimately as a member of the Zoological Society, and in many other organizations devoted to scientific objects and the public good. He could safely say he never knew a better man, or a more unselfish one. Always ready and glad to impart to others any knowledge he had acquired, he was truly a friend to every one, and had no enemies. His duties in this and all other organizations were always conscientiously and thoroughly performed.

Letters were read by the Secretary from Edward L. Wilson, of New York, and Charles R. Pancoast, of Waterbury, expressing deep regard for their deceased fellow member, and mourning his loss.

The President appointed Messrs. Browne, Samuel M. Fox, Coates, Springs and Caleb Cresson a committee for the purpose, who prepared the following minute, which was ordered to be entered upon the records of the society.

"The Photographic Society of Philadelphia have heard, with deep regret, of the death of their late fellow member, S. Fisher Corlies.

"Connected with this society from its organization, as Treasurer for over a quarter of a century; constant in his attendance at its meetings; firm and decided in his views, yet ever considerate of the opinions of others; always ready to aid with his sympathy and counsel; his genial, unselfish nature endeared him to all, and made his influence—quiet and unassuming though it was—most potent for good in the history of the society.

"Through years passed in his companionship we recall many pleasant recollections of his love for nature and all that is pure and beautiful; his skill in photography has left us with treasured mementos of happy hours passed with him, never to be forgotten.

"His death has cast a feeling of profound sorrow over this society, and while we bow with reverence to the Almighty Power that has taken away our beloved member, we turn to his sorrowing family and respectfully offer our heart-felt sympathy in their irreparable loss."

On motion of Mr. Coates, Mr. Samuel M. Fox was appointed Treasurer *pro tem.* for the unexpired term of Mr. Corlies, or until a regular election can be held.

Adjourned. Robert S. Redfield,
Secretary.

ROCHESTER ACADEMY OF SCIENCE, PHOTOGRAPHIC SECTION

Regular Meeting, June 19, 1888.

On account of the absence of President Croughton H. W. Mathews was elected President *pro tem.* A vote of thanks was extended to the Rochester Optical Company for the presentation to the section of one of their "Ideal" lanterns. These lanterns are constructed with a powerful burner and a double thickness of yellow and ruby glass so that, while giving an abundance of light, they may be used with the fastest plates without danger of fog. On motion it was decided to continue the meetings through the summer, and the idea of the academy going on an excursion to Stony Brook Glen was approved. Owing to the absence of Mr. Rafter the subject for the evening "Photo-micrography" was postponed indefinitely. Voting on the prize prints kept the members of the section busy for awhile. It was at last decided in favor of Mr. Mathew's view taken in a "Sugar Bush" near Batavia, N. Y. C. F. Hovey's view taken while on our outing at Palmyra stood a close second. C. Kerrigan's representation of a moonlight scene attracted attention. J. F. Hovey presented the section with a photo of the "outing" group. The Secretary was appointed a committee of one to experiment with the aniline printing process and to give a demonstration of it before the section.

Milton B. Punnett,
Secretary.

COLUMBUS CAMERA CLUB.

Meeting (June 18th) called to order with *President* Lincoln in the chair and eight members present. Minutes of preceding meetings read and approved.

Committee on Exhibit at Ohio Centennial Exposition at Columbus reported that as the Art Commissioner could not make any definite assignment of space, that the plan of an exhibit by amateurs from all parts of the State, under the management of the Columbus Camera Club, be abandoned and simply a club exhibit made. After an informal discussion it was decided to postpone further action until a definite understanding with the Centennial Art Commissioner be arrived at.

The resignation of Mr. Leon Adrot was read and accepted.

It was moved that a lantern exhibition be given at the U. S. Barracks, July 10th, and that Messrs. Lincoln and Bradford be appointed a committee to design and print three hundred photographic invitation cards. Each member to be entitled to twelve invitation cards.

Motion carried.

The subject of hydroquinone development was then taken up and remarks made by Colonel Lincoln and Messrs. Howe and Phillips. These gentlemen all enthusiastically indorsed the virtues claimed for hydroquinone, and expressed their determination to give John Pyro the go-by hereafter.

Dr. Piffard's and Von Sothen's were the formulas recommended, also Seed's preparation.

President Lincoln gave an interesting account of the outing of June 16th, graphically describing the incidents of a very enjoyable trip by canal-boat to Shadeville and return by the club members and their friends.

A special meeting for the election of new members was called for July 2d, at 9.45.

Meeting adjourned on motion.

F. H. Howe,
Secretary.

THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

Regular Meeting Tuesday, May 8, 1888.

President Canfield in the chair.

The minutes of the last meeting were read and approved.

The *President*—I now have the pleasure of introducing Mr. Leaming, who has a paper to read. See page 332.

The *President*—I am sure you have all listened with great interest to the paper of Mr. Leaming. I am sorry for one thing, and that is, that you cannot see the effect of the olive tint which he speaks about, because, it seems to me, they are beautiful and quite unusual. In fact, it was noticing that tone in some of Mr. Leaming's prints which induced me to ask him to read his paper to-night, and I presume it may be shown in the daytime, if any of the members are here, and I would call the attention of the members to that little wrinkle in the way of printing.

Mr. Beach—I move a vote of thanks to Mr. Leaming for the very interesting paper which he has read.

Motion carried.

The *President*—Mr. Beach will show a new form of detective camera, and he has an apparatus for cutting lantern slide mats, and a print on celluloid with a long name (laughter).

Mr. F. C. Beach then exhibited an improved detective camera, the invention of Mr. J. H. Ford, of this city. It is compact, light, easily and quickly operated; simple, durable and inexpensive. It makes pictures about two and one-half inches square, and somewhat larger in size than the concealed or vest camera.

The negatives are well adapted for making lantern slides by contact. The lens is double and about as large in diameter as a good-sized button. It is secured to a hemispherical nickle-plated metal front, which is screwed to a light, square wood frame, adapted to receive a delicate single plate holder, having a slide and everything complete.

The lens works at a set focus, and cuts near and distant objects perfectly sharp. No ground glass is required.

Operating within the hemispherical front of the camera is a hemispherical shutter having an aperture equal in size to the diameter of the lens. The shutter works in a vertical plane, and is propelled by a small coiled wire spring on its axis outside.

This construction precludes the possibility of any light leaking by the shutter. It is set by moving a small crank attached to the axis. The release mechanism is very simple, consisting of two rods so arranged that when one is pushed downward with the finger it carries the other rod with it, allowing the full sweep of the shutter for an instantaneous exposure.

For a time exposure, one rod is pushed downward, releasing the shutter, which revolves a quarter of a revolution until stopped by the second rod, the exposure is then made, and when the rod is depressed the shutter completes the latter half of its revolution, closing the lens.

A flat tension spring, regulated by a screw, presses upon the shaft of the shutter, which easily regulates the speed.

Ordinarily, the camera can be carried in the palm of the hand, allowing the lens tube to project through between the fingers; it is then concealed, but the one shown was inclosed in a neat black walnut box with an ornamental handle, and could carry two or three extra plate holders. Excellent specimen negatives and prints were passed around, showing clearly the value of the apparatus. By using square plates, the inventor claimed the expense of working the apparatus was reduced. Round pictures could be made on the square plates if desired.

Mr. Beach also exhibited a new style of photograph called the "Cellulograph" which he said was patented. The sample shown has been given to him by the owner of the process, Mr. C. Theodore Cain, of Owensboro, Ky. The principle of the process was the transfer of a collodion film to a sheet of celluloid. The directions Mr. Cain gave were as follows: Take a sheet of plate glass perfectly smooth and slightly larger than the intended picture, and put around one side or face of it a safety edge about one quarter to an eighth of an inch wide, of a solution made of water, four ounces, in which the white of one egg is placed.

When the edging is hard and dry flow the plate over with collodio-chloride emulsion which can be purchased ready prepared from any manufacturer of photographic supplies. As soon as dry place the plate film side downwards in a horizontal position in a fuming box about eight or ten inches above the saucer containing ammonia and let it remain there from three to five minutes.

The prepared plate is next put in a printing frame behind a negative, in the sun or shade, and printed the same as silver paper, care being taken to print a little darker than is desired. The operation can be observed by looking through the back of the sensitive plate, when the back of the frame is opened.

After printing wash the plate for three or four minutes under the tap and then tone with the following bath.

TONING BATH.

Gold solution (strength 1 grain to the ounce of water) .... 1 gram.
Neutralize acidity with carbonate of soda until red litmus paper turns blue, then add water...... 8 to 10 ounces.

The picture on the glass in this solution will tone very gradually first from a red color to brown and then to purple. When the right tone is obtained remove the plate and wash in or under running water for five or ten minutes, then fix in a very weak hypo bath, one ounce of hypo to fifty ounces of water; next wash under the tap for a few minutes, or in three or four changes of water for about an hour.

The plate may then be set up to dry spontaneously or by heat. This in reality a transparency on glass.

To transfer the film from the glass plate to the celluloid plate is the next process.

The celluloid plate is flowed over with a solution of plain collodion (five grains of cotton to the ounce), this is allowed to set and soak somewhat into the surface of the celluloid, then the coated surface is again covered with a camphor solution made as follows:

Alcohol.............. 1 ounce.
Camphor............ 5 grains.

and a little excess is left on the surface, so that when the glass plate is pressed upon the celluloid surface, the camphor solution will embed its film.

To aid in the transfer Mr. Cain has a special frame made; the celluloid plate after being coated is put in it, then the glass plate, picture side down, is placed in contact with the celluloid while the surface is moist and is clamped in contact therewith under pressure by suitable devices. To avoid air bubbles when placing the glass in contact with the celluloid, first let one end of the glass plate strike the celluloid, then with a slow but gradual continuous motion, lower it until it is in perfect contact all over.

In about three quarters of an hour, the celluloid sheet and plate may be removed from the pressure of the frame, when it will be found that the glass, by loosening one part of the plate, albumen edge, will easily separate from the celluloid leaving on the latter the positive picture, apparently highly burnished, and resembling very closely in finish an ivorytype. If left longer than three quarters of an hour the picture will separate itself.

The celluloid sheet bearing the picture on being damped is apt to curl up some, but by putting it under pressure until it is thoroughly hardened it will dry flat. Should it at any time show a tendency to curl afterwards it may be flattened by passing over the back a moderately warm flat iron.

If it is desired to put round the picture any embossed or ornamental border it may be easily done by dampening the celluloid sheet slightly and placing it between suitable dies. A slight pressure will mold it to any desired form.

The celluloid sheet may be mounted on still heavier sheets or on cardboard by using a solution somewhat stronger in camphor than that previously mentioned and also more pressure.

The specimen Mr. Beach showed presented a very pleasing appearance. When the simplicity of the process becomes known there will doubtless be a large number of amateurs and professionals who will be glad to utilize it. The picture can be readily colored. Samples of celluloid without the picture and a glass transparency ready to be transferred were shown.

The *President*—The next business is communications. The Secretary has handed me no communications; but I have received a letter from Mr. Fred E. Ives, of Philadelphia, promising that he will favor the society with a paper or an exhibition in regard to his specialty of color-sensitive photography next fall.

As I had the pleasure of visiting the Boston Exhibition I will give a few particulars. From this society there are exhibits of fifteen members. In all seventy-seven frames and about two hundred and five prints, which I think is a very good showing. Besides those there are one set of slides and seven transparencies. The diplomas this year were fewer in number than last and only fifteen issued in all, and of those fifteen two went to Professor Rowland, of the Johns Hopkins University, one for the best landscape and another for the best two transparencies, both of them representing scenes in Norway, and one to Miss Barnes, of Albany. Both are corresponding members of our society.

In pursuance of the power conferred on them at the last regular meeting of the society, the Board of Directors have, on behalf of the society, joined the Lantern Slide Interchange on the basis which was proposed a short time ago in Philadelphia, when Mr. Lawrence was a delegate representing this society and agreed to the rules on its behalf.

Under the conditions of our membership in that Interchange this society is to furnish a quota of one hundred slides. Those will be due the 1st of next October, and from what little experience I have had in similar lines I know it is not too early to call your attention to the matter now. I hope all those who are interested at all in making lantern slides will bear this in mind. I believe the Lantern Slide Committee intends to bring it to your notice hereafter, but I speak of it in this way.

If there are any of the members who have not lockers they can be accommodated, or, at least, they can find out when they can be accommodated by communicating with Mr. Roumage, the Treasurer, who has that matter particularly in hand.

Since the last meeting the following persons have been elected members of the society: Mr. Thomas T. Conner, Mr. W. B. Carman; and Mr. George Fairman, a former member of this society, has been reinstated—that is, without the formality of being elected over again.

I believe there is a report of the Lantern Slide Committee in regard to the Interchange. We will listen to that now.

REPORT OF THE LANTERN SLIDE COMMITTEE.—Since this committee was appointed it has provided for one lantern exhibition held on the 25th of April, and has supplied lantern slides for three other exhibitions, at other places.

With a view of encouraging lantern slide making, it has decided to have a certain night set apart in each week during the season for the testing of slides in the society's lantern, and which will be in charge of some member of this committee. Every Wednesday evening will be adopted for this purpose, except when the same occurs on holidays, then probably on Mondays. The committee cordially invites any member to bring slides for trial on these evenings and hopes that the additional facilities furnished will induce a larger number to take up this interesting branch of photography.

The committee desires also to say that it has completed arrangements for the loan of the society's lantern slides to members desiring to give private exhibitions at home. Application should be made a day in advance to any member of the committee.

The committee has been informed that the society, through the Board of Directors, has ratified the rules adopted at the Philadelphia conference in February, creating the "American Lantern Slide Interchange," and has also been informed by Mr. George Bullock that this action organizes the exchange, ours being the fifth society to ratify it. The Boston, Chicago, Pittsburgh and St. Louis Associations are said to have withheld their assent, though one or two may reconsider. One of the advantages of the new exchange will be that no slides will be permitted to be circulated except those properly mounted and previously tested by the Board of Managers.

Under the rules this society is required to have ready by October 1st next, one hundred suitable slides, which, after exhibition before the society, will be sent to the Board of Managers, who will test them and return to the society any that appear in its judgment to be defective. The balance will then be sent the rounds of different associations, and at the end of six or eight months will return again to the society.

So far as this committee is concerned it begs to submit the following plans: Let fifteen or twenty members interested in slide making submit to it before September 1st next, ten or fifteen slides each; the committee will select therefrom one hundred for the exchange; these it asks shall be loaned to it by the contributing members for nine months. At the end of that period the committee will return the slides to the contributing members with the request that such slides as have been selected for shipment abroad to the London Camera Club be donated to the society, or in lieu thereof, duplicate slides equally as good furnished.

By this method no member is compelled to give up any slide he may furnish.

In thus donating slides to the society for the purpose mentioned the society gets back in return as many slides of foreign scenery and subjects, which become eventually its permanent property.

The committee is also informed that the Secretary of the Treasury has decided to admit foreign slides sent to the society, free of duty, which will save considerable annoyance. A duty of forty five per cent. has been demanded, and amateur slides, valued by the Government, at ten cents each.

The members of the committee will be pleased to aid members by giving information about the making of lantern slides, and hopes that its plan for the collection of a quantity of superior slides will be heartily supported.

Respectfully submitted,
F. C. BEACH,
Chairman.

NEW YORK, May 8, 1888.

The *President*—Is it your pleasure that this report be adopted?

Mr. STEBBINS—I move that it be adopted.

Motion carried.

The *President*—The next thing in the order of business is the executive session. I do not know whether there is any business to be brought before the society or not. Is there any new business? [After pausing.] There does not appear to be any of vigorous growth.

I would say that some of the apparatus which was expected to be shown here this evening did not arrive, and it is an unfortunate disappointment. We hope next time to have a rather more extended display, so, under the circumstances, I will not prolong the meeting, and hope that the gentlemen and friends present will not go away at once, but take the opportunity to have a social talk with one another.

On motion, the meeting adjourned.

SPECIAL LANTERN EXHIBITION.

ON Friday evening, May 18th, a special lantern slide exhibition was given, comprising eighty-seven slides contributed by the Photographic Society of Philadelphia to the Slide Interchange, and about thirty others including some by members of the society and a few which were sent to the Boston Exhibition. The exhibition commenced at 8.30 P.M. and opened with the Philadelphia slides, showing five views in India by Mr. C. R. Pancoast. Those entitled the "Tomb of Nizam-nd dim-Alayia, at Delhi," interior of the "Pearl Mosque" and "Elphanta Caves," being much admired.

Five views by Mr. George Vaux, Jr., next followed, made from film negatives; the most interesting of which was the picture entitled "Waivona (Tunnel Tree) Mariposa Grove" in California. It represented a wagon load of children passing through, and was beautifully clear and crisp. "A Group of Children," by Mr. E. W. Keen was very well done.

A slide named "Church and Castle" made by the "Taupenot Process," by Ellerslie Wallace, Jr., was quite peculiar in tone and very pleasant to look at. He also had an excellent view of Albrecht Durer's house, at Nuremburg.

John Bartlett's original studies next followed and were all greatly appreciated: "Learning to Read" and "Old Cronies," the latter representing two old women talking in front of a fireplace, were especially fine. "Mill Creek" and "Darby Creek," particularly the latter, by Mr. E. W. Keen, were beautifully done and specially artistic.

Among the other fine views contributed by Mr. Ellerslie Wallace, Jr., were "Hotel Goldenes Dach'l" and "Theresien Strasse," at Innspruck, Switzerland; the latter had for a background a high precipitous mountain, white with snow at the top, against a dark sky. His "Schloss Stock Alper and Valley of the Rhone" from Brieg, Switzerland, was superb, the round stone towers of the church in the foreground standing out against the distance, backed by mountains.

Four slides by J. H. Burroughs, two of which were much admired, entitled "Watkin's Glen, Glen Cathedral," and "Smooth runs the water, where the brook is deep," displayed his artistic knowledge in respect to landscapes to good effect.

Some views of Southern life, by R. T. Hazzard, were well done. One, entitled "The Solid South," exciting much mirth, as it represented a lot of little darky children seated in front of an old shanty. His view of "Loading Cotton, New Orleans Levee," was very good, also his Georgia "Ox-teams."

A few pictures of typical "Stallions" by Dr. H. N. Howe were excellent studies.

Dr. A. G. Reed had a very good camp scene on Moosehead Lake; and "White Rhododendrons at the Philadelphia Zoological Gardens," by S. Fisher Corlies was much admired.

"Old Lutheran Church, Trappe, Penna." made on a film negative, by H. T. Coates, showed careful work.

"The Old Fisherman:" an old man having a young darky in a wheelbarrow, by W. D. H. Wilson, was particularly good. He had others of merit also.

Views of castles in Wales and France and "Ann Hathaway Cottage at Shottery," by F.

T. Fassitt, were remarkably clear and artistic.

William H. Rau's work was quite effective and pleasing: his "Surf-bathing at Atlantic City" was full of spirit, and his "Lion in the Philadelphia Zoo," President Canfield regarded as superior to anything of the kind he had ever seen. The lighting was perfect, while the position, detail and crispness were superb.

His views, entitled "Rainbow Falls in Winter" and "Frozen Cascade," both at Watkin's Glen, were remarkable ice pictures, and were loudly applauded.

His "Panorama of Bucks County, Pa.," was also excellent on account of the area covered and fine distance.

John G. Bullock's pictures, embracing a pretty view entitled "Ripplemead Ferry, Virginia," "An Idle Moment," "A Wayside Chat," were excellent studies in their way and illustrated how the commonest subjects oftentimes make the most pleasing pictures.

In W. H. Walmsley's four slides were two that were gems: one entitled "A Cypress Swamp on the Chickahominy," and "Avondale; Crum Creek;" the latter was exquisite in perfection of detail and artistic effect, besides being soft and pleasing.

John Carbutt contributed several views of instantaneous effects such as "Page making his high jumps" and "Tom Wray pole vaulting." They were excellent specimens in their way. His plant views, made on ortho-chromatic plates, were also good.

Robert S. Redfield's beautiful work appeared near the close of the exhibition; his studies "Great Expectations," a boy fishing; "Blowing Bubbles" and a "Virginia Forge" were very much liked, while his "Spiked Team" and on "Brandywine Creek" showed splendid taste and artistic feeling. The set of slides ended with a few more India temple views by C. R. Pancoast, which were fine specimens.

A few slides by members of the New York Society followed; those best liked were entitled "Evening on the River," by Walter A. Singer; "Ducks Racing," by Mr. Murray; "The Batter," by J. H. Stebbins, Jr., representing the ball in the air just after it had left the bat, and "Viennese Lady Fencers" taken instantaneously, by Mr. Chas. Simpson.

Then the exhibition terminated with the slides sent to the Boston Exhibition by George Marshall Allen; his "Midnight Sun view in Alaska" being one of the best, and a set of eighteen slides sent to the same exhibition by Robert S. Redfield, several were fine views of the United States Navy "Men of War Vessels" and instantaneous views of the military parade in Philadelphia last year. His "Victuals and Drink" picture was specially good, as also was one called "Loitering," and "A New England Watering Place;" this latter showed most excellent judgment in the location of the principal subject in the picture, a white horse, and perfection in technical qualities. The lantern was worked by Messrs. Singer and Simpson, assisted by Mr. Beach, while the subjects were announced by President Canfield. The New York and Philadelphia exhibits of photographs returned from Boston hung on the walls, and were greatly admired.

REGULAR MEETING held at the rooms of the society on June 12, 1888, at 8.30 P.M.

On motion, the reading of the minutes of the last meeting was dispensed with.

The *President*—The next thing in order will be the scientific business, as announced on the card. I find the first thing on the list is a paper on "Intensification and Reduction" by John Bartlett of Philadelphia (see p. 399). I would say that Mr. Bartlett sent this paper at my request at the suggestion of some of the members here, who desired that a paper on this subject be presented. I know that his researches in this direction have been very extensive, and the results of his experiments quite satisfactory. In inclosing it to me, he said he wished it were better, but hopes that it may be of service by stimulating discussion in the society, and I think it will be a very desirable thing if some discussion can be had. Of course our time is limited and we cannot devote much of it to the discussion of this paper, but if members wish to make any comments upon the paper, they will now have an opportunity to make them.

Mr. NEWTON—I would like to have an opportunity to ask a question or two in regard to that matter. There is one thing in that paper that he omits to talk about, and that is the durability of the negative intensified with mercury. Now my experience has been that using the method of putting gelatine plates into the chloride of mercury and using an alkali to reduce the chloride of mercury, the plates will not keep; I have never had one at the end of six months. He omitted saying anything on this subject, but spoke of the durability of the others, and it made me feel a little apprehensive that this was his experience, too. Now I noticed a mercury intensifier several years ago that I know gives permanent results. I have one negative intensified with the iodide of mercury, with the iodide in excess, that has had 700 prints made on it and which is just as good as ever.

A Member—I have intensified generally with an iodide intensifier. Prints made recently from a negative intensified with mercury and iodide seventeen months previously, were as good as those made at the time. But there is another thing that I do not believe in that Mr. Bartlett says, that is, reducing by means of per-chloride of iron and to place afterwards in the hypo or any other fixing agent; that is the most undesirable way to reduce a negative that I know of; you are never sure what you are doing.

Mr. NEWTON—In intensifying a gelatine plate by a process which makes it necessary to put it into a hypo solution afterwards, it should not be intensified until after it becomes dry. I think any of the intensifying processes works much better after a plate has once become dry; then if it is necessary to put it in hypo, there is no trouble in getting the hypo off from the surface. A very few minutes' washing will remove the hypo; it does not go into the film at all; I have proved that time and time again. After a few minutes' washing under a tap you could not find a trace of hypo about it; but of course when it is soft and the hypo gets into it, you have got to either wash it or take it out with lead. I take it out with lead.

Dr. PIFFARD—I have read his previous paper on intensification with per-chloride and gallic acid and silver, and made as careful trials with it as I could, but could not make the thing work. I was, therefore, in hopes that Mr. Bartlett would be here in person and demonstrate the thing. Now, I am a reasonably careful person, but I know very well that one man may make the attempt and succeed in being successful, while another person just as smart may not be able to do anything. I find that that has been the experience of one or two other persons who have tried to work the process.

Mr. NEWTON—My experience with gallic acid and silver has been the same as the Doctor's.

The *President*—I am very sorry Mr. Bartlett could not be here to make this matter clear to you, but in inclosing this paper to me, he said it would be impossible for him to attend in person. In the discussion that has taken place we have brought out several interesting points. I think we have clearly brought out the facts as to eliminating the hypo, and the points made by Mr. Newton are very good; that is, that the plates had better be dried before submitting to any further manipulation. Then the intensifier that Mr. Newton has already spoken of with mercury and iodide; certainly I should think that that method is rather easier than any other—that I have tried at all events. He has also brought out the fact that the Monkhoven intensifier, so-called from its author, is a very good one. Therefore I think our discussion of this paper has not been without fruit.

Next on our list is the aristo paper. This is a prepared sensitive paper, which was intended to be demonstrated at this meeting, but the gentleman who presents it tells me that he has been unable to get any prints developed that are quite satisfactory. He has, however, brought some sample prints which will be passed around, and at his request Mr. Ehrmann will say a few words in regard to the general principles involved in the process.

Mr. EHRMANN—There is a sort of paper called the "aristotype" paper; but whether this is identical with the aristo paper I am not prepared to say. The paper generally used in Europe is gelatine paper. This is a chloride of silver printing paper invented first by Obernetter, made with chloride of silver in the gelatine and spread upon the paper, and generally that paper prints beautifully. It prints quicker by 33 per cent. than specially prepared silver paper prints and gives justice to a negative as much as any other process and perhaps more so, but there is a great difficulty in toning, and as you gentlemen all know chloride of silver gelatine is not stable; therefore, the paper turns yellow more rapidly than others. Many professional photographers do not succeed with it. The reason is simply that they do not know how to tone it. Three or four expert photographers have gained great celebrity by their beautiful prints on aristotype paper. Several professional photographers have attempted to make the paper and failed in some instances and in others they were successful, but they dropped it again because it was too expensive. Now, gentlemen, it is no such thing; it is not too expensive. If you only know how to make it and make it economically. I have learned that they are making aristotype paper here in the State of New York and making it successfully. Aristotype paper is easily to be made, as I told you before. It is nothing else than a chloride of silver paper. You can readily get a formula for making it, but you can buy it ready made almost as cheap. Chloride of silver mixed with gelatine is spread upon paper by machinery. How they do it I do not know, but they claim to do it. That paper they sell now in the ordinary shops. They claim it prints a great deal quicker than silver paper; but even if it does not print any quicker, it gives justice to your negative. The paper we have before us is called aristo paper "aristos"—"the best." Now we come to toning. Toning proceeds much easier than with blue prints. By reflected light it looks red and you will be easily deceived by that. You must not tone too much, you destroy the good appearance of the print. It looks bluish gray. It will fix in a few minutes; put your print in, turn it around a few times and it is fixed just as quickly as any other way. Then put it under the tap. Five minutes' washing is quite sufficient. If you want to print them and burnish them you must burnish while still moist. If you allow the paper to get very dry the heat of the burnisher will crack and spoil it.

Mr. Beach—Can the combined toning and fixing be used?

Mr. Ehrmann—Yes; it ought to be done, if we follow the formula, expeditiously and beautifully, and should save a great deal of time. Now, according to our experience, a small amount of hypo turns the prints yellow, and we would not be able to get white prints that way, but I have full confidence in this method, and I think that with a little experience we will get over that trouble.

Mr. Newton—There is no question about that.

Mr. Dryer—The paper that is commonly used in Germany is a gelatine paper with chloride of silver. This is a collodion paper. You cannot burnish the gelatine paper. It will print notwithstanding what Mr. Ehrmann says in one-half or two-thirds of the time of silver paper. It will print in a dark day. We have made prints in about two hours on a dark day. It prints from a thinner negative. Weaker negatives are desirable. In toning and fixing and mounting it will save a great deal of time. The prints do not have to be handled in the washing bath. The paper is more tender and that is one thing against it, and it is more likely to tear than any other paper. Of course it may have faults that another kind of paper would not have, but these can all be avoided by careful handling. You can take the photograph, put it through the necessary operations, and in two hours, if necessary, could have the prints all finished, and the cost is not excessive. Albumen paper is probably a little cheaper. I have some samples of the paper which I will leave with the members and they can work out these different points. I will advise them to take a weak negative; it will make a very good picture on this paper.

A Member—There is one thing that surprises me and that is the direction that the prints must be mounted wet; I do not find this desirable.

Mr. Ehrmann—I do not think so; they are only to be mounted dry. I would like to say something about that paper. I have some paper now which has been in my room a long time, over a year, and it is in a very decent condition. (*To be continued.*)

* * *

Hearing a noise at night, Judkins descends with a lighted candle, and discovers a burlar escaping with a full sack. "Hallo!" he cries, "come back!"

"Eh, what?" returns the burglar; "ah, yes, the silver candlestick! Permit me." He takes it from the hand of the astonished Judkins, puts it into his bag, and politely says: "Ten thousand thanks. Have I forgotten anything else?"

* * *

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the Bulletin. *Correspondents will please remember this.*

Q.—W. E. G. writes: How shall I prepare white Castile soap for use as a lubricator on a burnisher?

A.—Dissolve the soap in alcohol or use the pure Castile soap rubbed on the burnishing tool with a cloth.

Q.—A. W. writes: Can you give me the formula for making chloride of platinum and also for toning bath? What books would you recommend for practical use in photographic work, that will give good results?

A.—Chloride of platinum is quite difficult to make. Consult Fowne's "Chemistry" under the head of platinic chloride for details of method. As to platinum toning bath, read the letter of our English Correspondent, Talbot Archer, in the Bulletin for February 11, 1888, page 69. Get Wilson's "Photographics" or Wilson's "Quarter Century of Photography" or both, for latest general photographic information.

Q.—A.L.L. writes: While in New York some time ago I noticed in a show case some instantaneous photographs of surf. They were of a rich green color, and I think were labeled "Carbon Prints." Will you please advise me, through the columns of the BULLETIN, where I can procure the paper for making such color prints, or how the paper is prepared and used? 2. Can you give me a method for making prints of a brick-red color? 3. There is a very thin paper known as Japan or India paper, on which etchings are printed. Can this paper be prepared and used for making bromide and blue prints, and would it need any special preparation? Trusting my questions will not trespass on the columns of your valuable publication the BULLETIN.

A.—If the prints you speak of were made upon carbon tissue, the coloring matter was probably some pigment used in coating the tissue. Consult Max Bolte's articles on "Carbon Printing," in last year's volume of the BULLETIN. He tells all about these processes. Brick-red prints can be made with urainum salts. See BULLETIN, page 322, June 11, 1887. We think the paper that you mention would be too thin unless specially prepared; perhaps sizing in galatine (10 grains to the ounce of water) would answer the purpose.

Views Caught with the Drop Shutter.

A MOVEMENT to establish a photographers' union is receiving attention from professional photographers in this city, and will in all probability be an accomplished fact within a few weeks. Louis Eichwald, who originated the idea, proposes that the best photographers combine for the protection of the business and the arrangement of a uniform scale of prices and wages. Incidentally a photographers' bureau is to be established in connection with the union, which will bring those interested in closer communication. More than fifty well-known photographers have already signified their intention to push the idea, and are actively interesting themselves. Others who desire to join in the movement can address Louis Eichwald, No. 18 Clinton place, or call there and personally place their names on the list.—*N. Y. World.*

ON June 21st the Southern Teir Photographic Association, of Steuben County and vicinity, completed its organization and associated for the protective and educational benefit of professional photographers and their employees. They extend through our columns a cordial invitation to the photographers of their vicinity to join with them, which they can do by communicating with

A. B. STEBBINS,
Secretary.

CANISTEO, N. Y.

ZIMMERMAN BROS., the well-known photographic merchants at St. Paul, Minnesota, send us a circular of railroad information and a diagram showing their location in the city. We hope to have the pleasure of meeting these gentlemen in Minneapolis.

Can any of our readers give us the address of Mr. A. S. Barber, photographer, late of Providence, R. I.?

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THE HOMESTEAD,

By S. W. Burnham, Chicago.

ANTHONY'S

Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

JULY 28, 1888. Vol. XIX.—No. 14.

THE PHOTOGRAPHIC CONVENTION AT MINNEAPOLIS.

When we started from New York to attend the Ninth Annual Convention of the Photographers' Association of America we heard a great many opinions that it would be a failure. This did not agree with our own belief, for although we could hardly expect a meeting with the attendance and interest that was shown at both St. Louis and Chicago, yet we felt assured that a reasonably good attendance was to be expected. If the association is what its name indicates, then it should be capable of holding its conventions in any city of the United States that can supply it with the necessary accommodations.

On arriving at Minneapolis and on the morning of the first day of the convention, it did look dubious as to the success of the meeting; but as the day wore on and new delegations from various points arrived, the outlook became more cheerful and at the afternoon session a fairly good meeting was at work upon the regular business of the convention. From this time the attendance increased, and before the close of the convention there were about three hundred and fifty members in session. So that, taking into consideration the position of the city, the attendance may be considered good and all that could be expected. Everything was done by the photographers of St. Paul and Minneapolis to make the meeting a success and to contribute to the entertainment of their fellow members. On every hand was to be noted evidences of their forethought and care that the visiting photographers should have an interesting, and at the same time a pleasant, convention.

The City of Minneapolis is delightfully located, and the atmosphere and climate all that could be desired. To those of us that went from the East, it was a great treat to breathe the dry and cool fresh air of this thriving city of the Northwest. The country around is dotted with a number of pretty lakes, and these are the pleasure resorts of the citizens of both Minneapolis and St Paul. The excursion to Lake Minnetonka, under the auspices of the photographers of Minneapolis and St. Paul, was a most delightful entertainment. A short railroad ride brought us to the shores of the pretty lake where we took the steamer Belle of Minnetonka for a trip up the lake, the cars being in waiting to carry us back to the city, arriving at dusk. Lake Minnetonka is somewhat like Lake George

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in this State, only the surrounding country is not quite so high. The wooded slopes with the residences of many of the more wealthy people of the twin cities of the Northwest formed interesting objects for many cameras, and little bits of the shore here and there were a delight to the eye that loves the picturesque.

Another pleasant excursion was to the celebrated "Falls of Minnehaha" that have been so often heard of in song and story. Owing to the late heavy rains, these falls were in a good condition to exhibit their beauty, the large volume of water rushing over them adding much to the charm of the scene. Although only about sixty feet high and the same wide, the rush of the water down the ravine, the rapids below and the rich verdure that surrounds them, all go to make up a picture of great beauty. The "Falls of St. Anthony" are unfortunately marred by the applications of the water power to the milling and other interests of Minneapolis. Nevertheless, it was very pleasant to look out of the windows of the meeting room and see the spray dance in the sunlight, the prismatic play of colors in the rushing foam adding much to the beauty of the scene; while the murmur of the waters as they fell from rock to rock was a refreshing sound, and added to the restful influence of the scene.

Such were some of the enjoyments we had at the Minneapolis Convention. The more utilitarian phases of the meeting need but a few words here. The exhibit of apparatus and photographic appliances was not large, but quite interesting. Although there were a few new developments in this line, the general tendency among manufacturers was to an improvement in the later inventions.

The exhibit of pictures was quite good in numbers, and the quality was fully up to those of former exhibitions. Bromide prints are constantly improving both for plain enlargements and also as a basis for artistic work. In this particular we must congratulate our publishers upon their excellent exhibit. It showed the marks of progress and the growing utility of this paper. Work by those not connected with our publishers was fully equal to the best, and was an evidence that bromide paper can be as easily worked by those who have no special knowledge of the subject, as it can be by experts. The progress in this line was well marked and a great improvement over last year. As an evidence of this the judges of the convention awarded a silver medal to work done on the paper manufactured by our publishers. Furthermore, the pictures that obtained this medal were taken to Minneapolis for exhibition only, but when we looked at other pictures entered for competition in this class (L) of the association we advised Mr. Jordan to enter his for the medal, for we were satisfied that they were fully up to the best shown by others, although their number was small. This makes the winning of the silver medal still more meritorious, as no special effort was made to secure fine pictures to compete for a prize; they were simply good every day work and can be made by anyone who will take moderate care with this brand of bromide paper. Of other pictures we shall say more in another place.

As to the meetings of the convention we can say that although not large in the number of members present or the papers presented, nevertheless the sessions were very interesting and the members showed their appreciation of the work by an attention that we have not often seen displayed before. This was partly due to the fact that the audience room was somewhat removed from the exhibitions of apparatus and pictures, a point that we have on several occasions recommended to the executive officers.

There is still one other way of getting yet better meetings and affording time for discussion, that is to have the meetings held in the evening, and leave the daytime for the exhibitions of apparatus and pictures. We sincerely hope this will be tried at the next meeting.

Altogether the convention at the Falls of St. Anthony will be remembered as a delightful reunion with our brothers of the Northwest, a profitable meeting for all present, and another signpost placed along the road of photographic progress.

Now let all who believe in the onward march of our art remember that in Boston next year we celebrate the fiftieth anniversary of the birth of our art. For it will then be fifty years since Daguerre gave to the world the first principles of his discovery, which to-day is the radiating point for numerous industries, the delight of thousands of the lovers of art, and adds to the material welfare of every civilized country on the face of the globe. Let us have a grand meeting in Boston in 1889.

EDITORIAL NOTES.

The next convention of the Photographers' Association of America will be held in Boston, Mass., when the following officers will be in charge: *President*, H. McMichael, of Buffalo, N. Y.; *First Vice-President*, Geo. H. Hastings, of Boston, Mass.; *Second Vice-President*, J. M. Appleton, of Dayton, O.; *Secretary*, O. P. Scott, of Chicago, Ill.; *Treasurer*, G. M. Carlisle, of Providence, R. I.

Mr. George G. Rockwood, of New York, who was present at the Minneapolis Convention, gave a very interesting account of his method of making flash light pictures of large audiences. He also exhibited the lamp that he uses for making flash light portraits in the studio and explained its uses. We hope to give a more detailed account of this in a future issue.

The Blair Prize Cup was again won by Mr. James Landy of Cincinnati, and according to the conditions of the donor, he now becomes owner of it, having by his skill and artistic taste proved himself twice the peer of all his competitors. It must also be noted that the picture of Hiawatha made by Monfort & Hill, of Burlington, Ia., was considered so good that the judges decided that it was worthy of "honorable mention."

"The International Annual of Photography" is now published, and we strongly advise our readers to see it and judge for themselves of its value. We do not know of any volume of its size and price that can be compared with it for the value of the photographic information it contains. It is important that copies should be secured early as it is not probable that a second edition will be issued.

The following list gives the societies and directors of the newly organized American Lantern Slide Interchange, and results from the conference held in Philadelphia last February: Society of Amateur Photographers of New York, F. C. Beach; Brooklyn Camera Club, W. F. Miller; Photographic Society of Philadelphia, William H. Rau; Philadelphia Amateur Photographic Club, Edmund Stirling; St. Louis Camera Club, H. B. Alexander; Chicago Lantern Slide Club, W. A. Morse; and Cincinnati Camera Club, George Bullock. The directors are to elect a manager and two assistants which are to form the executive committee for one year.

A NEW society of amateur photographers has recently been organized in Rome, Italy; the following is the list of officers: *President*, Antonio Ruffo, Duca d'Artalia; *Vice-President*, Gargiolli Ing. Giovanni; *Secretary*, Rocchi Carlo; *Vice-Secretary*, Valenziani Cav. Enrico. We have to thank the Secretary for a copy of the rules, and wish the new organization every success.

Messrs. A. FARSARI & Co., of Yokohama, Japan, have been making some excellent work upon mat-surface paper painted in water-colors over photographic impressions. This work is said to be exceedingly beautiful and the Japanese artists have taken great delight in it, the paper being of Japanese manufacture by Farsari & Co.

THE next meeting of the American Association for the Advancement of Science will be held in Cleveland, August 15th to 21st, inclusive. Those of our readers who are near that city should attend the meetings of the chemical and physical sections, B and C, as they are often of much interest to the photographer.

THE Columbus Camera Club sent us a very pretty little invitation to their first public exhibition, held July 12th, last. It consists of a group of views, together with a camera and optical lantern. From the latter the invitation appears as a disk, thrown upon a screen, as in projections. The idea is neat, unique and very artistically carried out, the whole being the design of Mr. J. N. Bradford, of the club.

ENGLISH NOTES.

[*By our Special Correspondent.*]

CONTINUED efforts are being made by a few earnest writers and workers to revive stereoscopic photography. My own opinion is that the process is "too much trouble" for the average photographer of to-day. Yet the revival may be a success in the sense that it may set as many at work at this charming pursuit to-day as there were twenty years ago, in those palmy days when a stereoscopic outfit formed part of the equipment of at least every other photographer. Suppose 500 men then worked mainly for the stereoscope. They formed a large proportion of the active workers of that day; but nowadays the same number would be insignificant compared with the 50,000 camera carriers in these islands alone.

The Camera Club of Bedford street, London, continues to flourish. Fortnightly, day or half-day excursions are held to pretty places within a few miles of London, and a "Friday to Monday" trip to Dovedale, in Derbyshire, one of the loveliest spots in England, has been organized for the end of July. It is unfortunate, however, that this clashes with the last two days of the great photographic convention at Birmingham. The Camera Club is now three years old, and not its least attractive feature is the admirable library which Mr. Lyonel Clark is assiduously storing on the club premises; the Club Journal (monthly, to members only) is also becoming a really valuable periodical.

It is a capital idea when a party visits some place of historic interest, to take costumes which some of the party (who may have previously practiced the wearing of the said dresses) can assume, and then pose in harmony with the surroundings for the benefit of the assembled cameranians. This plan was adopted by the Leicestershire Photographic Society the other day on their trip to Wingfield Manor, an old house in Derbyshire. Ruins, abbeys, castles—all need figures to give a scale to the picture, if for no other purpose; but how out of place the modern man or woman looks in the scene. Therefore, my friend of the lens, borrow a wrinkle from the painter; put then a monk's gaberdine and cowl, or it may be a Puritan's doublet and broad-brimmed hat, in thy portmanteau when thou goest picture-making to such spots. Or suppose it be "landscaping" that enthralls thy mind? Canst not persuade some damozel of the party to don a kirtle and sun-bonnet or a gypsy-hat, and pose on that bridge or handle a rake among the hay? So shall thy pictures gain in Robinsonian beauty (with fit figures as the forté points) and thou shalt win high repute and medals galore at the exhibitions!

Those who wish to dry their silver prints quickly should try the following plan; it is not new—there is nothing new in photography—but it is useful: Squegee your wet prints face down upon ferrotype plates. Now heat these plates carefully over a gas-stove, or in front of a clear fire, and in a few minutes they will peel off with a beautiful polish or gloss.

A photograph never looks so well as when it is mounted behind a "cut-out mount," having a thick bevel edge. Another advantage in this plan is that it is not necessary to trim the prints, as the mounts hide the margins. Neither does the print lose any gloss that may have been given to it—as for instance, by the method stated above, of drying by heat on ferrotype plates—for it is only necessary to gum the margins. A second piece of card should be placed behind the mount to press forward and support the photograph.

Do you ever attempt instantaneous work? It is most charming, but "good for the plate-makers," for I think that for every success there are ten failures. I do a good deal in this line, and perhaps my experience may help to reduce the number of your spoilt plates. The best instantaneous pictures are those which have been carefully drilled for. On the sea-shore from May till August, in the middle of the day (11 to 1), and with a bright sun nearly behind the camera, almost any effect may be secured—diving, leap-frog, racing, somersaults, etc. The "performers," however, must not be by any chance persons whom the photographer may rely on picking up, but models who have practised their task and who can be relied to do exactly as they are desired.

Under such conditions I use $\frac{f}{16}$ as the best stop on a rapid rectilinear Dallmeyer lens, and develop *slowly* with pyro ammonia, adding the alkali drop by drop. For town work don't take out your camera unless the day is thoroughly fine; the sun will dodge you behind clouds till you get tired of the pastime. The very best time for town work is after a gale, when rain and wind have swept away the smoky air which overhangs every great city. On a really fine morning after heavy rain you will be surprised at the comparative ease with which you can get street scenes and effects.

I find that the best rapid plates now in the market are coated with but a small proportion of gelatine, although they are rich in silver. In developing these thinly coated rapid plates it is necessary to continue until the whole image —not the details but the outlines of the entire picture—are distinctly visible on the back of the plate. The slow "landscape" plates, on the other hand, must have their development stopped before the image shows at the back at all; otherwise they will be too dense.

A good plan has been adopted lately at some of our society meetings that a given piece of apparatus should be examined and discussed on a given night. Say the subject is "Tripods"; each member brings his tripod, sets it up and explains its working; possible improvements are discussed, and very often even the "trade" gets a wrinkle. "Shutters" form the subject of another night's study, and so on.

The Meteorological Society has again issued an invitation to photographers to assist science by securing photographs of flashes of lightning. This is a comparatively easy task, but the worker must be prepared. The camera must be marked on one side with the focus for distant objects. The work must be done by night, and it is only necessary to point the lens to that part of the sky where flashes are occurring, and to cap it immediately when a discharge has taken place. Develop in the usual manner. From photographs obtained in this way during the last season no fewer than six or seven classes of flashes have already been made out by the meteorologists who have studied the negatives. One plate bears the impress of a flash of *dark* lightning! This sounds promising, and the next thunderstorm by night will have a "lightning catcher" in attendance who is known as

Talbot Archer.

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

New Magnesium Flash Light.—New Orthochromatic Collodion Emulsion of High Sensitiveness.—New Lantern for Dark Rooms.

The invention of the magnesium flash light, whose importance has manifested itself to professionals since Gädicke and Miethe furnished the proof, that instantaneous pictures can be taken by the same, although the flash might cause the sitter to wink, induces inventors to further new improvements. The celebrated oculist, Professor Cohn, in Breslau, has made an interesting observation. He recognized that heretofore too much magnesium had been used, and that a minimum of the same is sufficient for one exposure. Heretofore 1 gram was generally used. Cohn takes only $\frac{1}{16}$th gram, and this is actually sufficient for one picture. It depends only upon the complete ignition of the small quantity. Herr Schirm, in Breslau, has constructed for this a novel apparatus, calculated specially for portraits and groups.

The apparatus consists of an easily folding tripod, having a movable clamp to rest a spirit lamp on, or to carry a gas burner. The spirit lamp has at the lower part of the wick carrier an opening into which a semi-circular little tube can be inserted, the other end of the tube extending into a funnel shape. This tube is filled with magnesium—about one grain—through the funnel, and inserted into the opening of the burner, while the funnel-shaped end is connected with a rubber tube, having at its extremity a bulb for pneumatic pressure. A

T-shaped small brass tube conducts the pressure towards several flames and to ignite all simultaneously.

The apparatus for two lamps elegantly packed can be had for 45 marks from Julius Meyer, in Breslau. The lamp for the light side is 1 metre distant, and that of the shadow side 1½ to 2 metres from the sitter. But the most remarkable is the entire absence of smoke.

The latest novelty besides the magnesium is the orthochromatic collodion emulsion. It is known that Dr. E. Albert in Munich in his reproduction establishment does not take copies of oil paintings with gelatino-bromide dry plates, but with a color sensitive collodion emulsion. Some details have been made known about this emulsion. Dr. Eder has published a formula for such color sensitive collodion, which, to be sure, is behind the dry plates in sensitiveness, but is considerably more sensitive than the collodion bromide emulsion of former times. The production of this emulsion is based upon application of the eoside of silver first recommended by me, which is an optical as well as a chemical sensitizer.

Eder's emulsion is made in the following manner:

A. 15 grams cryst. nitrate of silver are dissolved in a bottle with 12 c.c. water, 90 c.c. of 95 per cent. alcohol are added, and then mixed with 150 c.c. of 4 per cent. plain collodion.

B. 15 grams of pure cryst. bromide of cadmium are dissolved by moderate heat in 75 c.c. alcoholic eosine solution (1:800), to which is added 150 c.c. 4 per cent. plain collodion.

The bromide collodion, under constant shaking (in the dark room), is gradually added to the silver collodion, until only about 5 to 10 c.c. remain from the bromide collodion.

Now the test is made, to see if the emulsion still contains an excess of nitrate of silver. This collodion emulsion will act only favorably with a small excess of nitrate of silver, which will cause the formation of eosine silver. If the bromine salt is in excess, the much less sensitizing action of the eosine alone will show itself, and the emulsion has very little sensitiveness. The test for an excess of nitrate of silver is made by putting a few drops of the emulsion upon a glass plate and adding, after solidifying, a drop of a solution of yellow chromate of potassium. An intensely cherry red spot (chromate of silver) is proof of a still large excess of nitrate of silver; bromide collodion is then added and the test is repeated; if the spot shows now a faint orange red color the emulsion is correct. (Emulsion with a great excess of nitrate of silver will give more sensitive and stronger, but impure and oftentimes foggy films; with too little excess of silver the emulsion loses its sensitiveness and the orthochromatic action declines. In this case 1 gram of nitrate of silver is dissolved in a few drops of water, to which are added 10 c.c. of alcohol, and this solution is gradually mixed with the emulsion, until a good result is obtained; emulsions with much coloring matter will stand more nitrate of silver). The emulsion can be applied at once, but it is better to wait from twelve to twenty-four hours.

The glass plate to be coated is covered at the edges with a rubber solution, collodionized in the ordinary way, immersed into a dish with well water after solidifying, and left in the same until the water runs off evenly from the film. In this way the nitrates contained in the unwashed original emulsion are removed.

It is best to expose the plates in a still moist state; after drying they become less sensitive. The time of exposure is about half of that of wet collodion with iron developer. Most paintings can be photographed orthochromatically with such emulsion without yellow glass; bright blue may be subdued by an aurantia-yellow glass.

As developer we may use oxalate of iron, pyro-soda or ammonia. The following formula, which has been applied already by others, is good:

A.

Sulphite of soda	10 parts.
Bromide of potassium	3 "
Citric acid	1 part.
Pyrogallol	2½ parts.
Water	100 "

B.

Ammonia	1 vol.
Water	6 vols.

Before use mix 100 c.c. water, 10 c.c. pyro (A.), and 10 c.c. ammonia (1:6).

The picture appears quickly and is fully developed in 30 to 50 seconds; hyposulphite soda serves as fixing solution. (If the plates should fog with this developer, 6 parts B, 12 parts A and 100 parts of water may be mixed.)

Intensifying is very seldom necessary. It can be done with silver-pyro-citric acid. Reducing is required more often; the well-known mixture of hypo solution with red prussiate of potassium is best for this.

The emulsion will keep from 8 to 14 days; after that fog will frequently form.

We have here therefore no durable emulsion. Dr. Albert now says that he can produce a durable emulsion, and it is his intention to place the same on the market. Whether he will succeed remains to be seen. I have had already several communications about failures with the formula, and I would remark that good results can be obtained only with certain pyroxylines (in my hands with papyroxylines), and that the future of the collodion is in the manufacture again of the latter article, which now is almost out of market.

For landscape photography the application of the collodian emulsion will always be confined, the invisible picture weakening considerably in the collodian emulsion, while gelatine plates retain their light impression for months.

Albert acknowledges also that his emulsion shows that high sensitiveness only when freshly exposed, but not when dry.

The process might therefore be of importance for reproduction establishments but not for landscape photographers, who require durability of the invisible picture upon the plate and that, if developed after months it will give just as good a picture as after immediate development, and this condition can be obtained only by the gelatine plate.

The red light illuminating the dark room, in which gelatine plates are developed, is, as is well known, very disagreeable to a good many. Green light has therefore been recommended. But I would caution against green light. All the green lamps which I have tried admit so much actinic light that it acts considerably upon gelatine plates, if exposed longer than one minute to the green light.

Gädicke, one of the inventors of the magnesium flash light, has constructed a yellow, dark room lamp by introducing a sodium salt into a Bunsen burner. The case is very simple, but even this meets with difficulties—the Bunsen burner, on account of its blue color, acting considerably upon dry plates. It shows even at one minute's exposure in the sensitometer at a distance of 35 cm. the figure 11.

The yellow sodium light had therefore to be conducted yet through a yellow glass, to catch the blue and ultra-violet rays of the flame of the gas. This met with success after a number of experiments. Gädicke has therefore constructed now a dark room lamp which gives a complete monochromatic *yellow* light, which is exactly as non-actinic, as the light of the ruby-lamp, but at the same time gives nine to ten times as much light and is more agreeable to the eye.

Another difficulty is the inconstancy of the sodium light. Gädicke had to construct a special burner and carrier for the sodium salt. Thereby he succeeded in producing a yellow lamp retaining for hours its illuminating power.

BERLIN, June, 1888.

PROGRESS OF PHOTOGRAPHY.

BY W. H. H. CLARK.

[Report to the Minneapolis Convention.]

Mr. President, Ladies and Gentlemen of the Photographers' Association of America: It has been my misfortune to be selected by your Executive Committee to present you with a report on the Progress of Photography during the past twelve months. If I do not report anything very astonishing, you must charge it to one of two things—perhaps both, viz: that photography has progressed so gradual, and the task so difficult to formulate a report of its progress during the passage of one short year, or else your committee has made a grievous mistake in their appointment.

I will be as brief as possible, endeavoring to make myself heard by the farthest member in the hall, therefore what I lack in enlightenment, I will endeavor to make up in noise.

Photography may now be divided into several distinct departments:

Portrait Photography being confined to professional artists who earn their living by their business.

Landscape Photography followed by professional photographers and amateurs.

Scientific Photography practiced for the most part by salaried men, but quite freely indulged in by amateurs.

Micro Photography properly included under the above heading; and

Stellar Photography, which is directed to the object of discovery in the realms of space, heretofore explored only by the telescope and mapped by drawings made by hand.

Stellar Photography

has made considerable progress; the governments of the world have taken it under their patronage, and we may look for wonderful developments in this direction, or at least our great, great grandchildren may. There will be placed in observatories, in different parts of the world, ten instruments of about eleven inches in diameter and about twelve feet focal length, for the purpose of photographing and mapping the heavens; when the parts are placed together, the whole will comprise a complete photographic map of the starry universe. As these instruments will be controlled and operated by men of undoubted zeal and ability, great things are hoped for.

Orthochromatic Photography

has made some advance, yet not so great as it should have done, or that it will do in the twelve months to come; photographers have been slow to appreciate its great advantages. Orthochromatic gelatine dry plates are now on the market, possessing good keeping qualities and of extreme sensitiveness.

Dr. E. Albert, of Munich, publishes a formula for orthochromatic collodion emulsion, which is said to produce plates as sensitive as any gelatine plates now on the market, are of easy preparation, and can be used wet or dry. Should all this prove upon trial what is hoped for it, photographers can have the pleasure and profit of making their own plates, as in the old wet collodion days.

Plates prepared orthochromatically are invaluable for many purposes, and desirable for all.

In the direction of

Photo-Mechanical Printing

there is little progress to record, so far as quality is concerned; the proofs of to-day are but slightly in advance of a year ago, but there is a marked improvement in the demand for this class of work; as the demand increases the quality will also increase, and uses will be found for them not thought of at present.

I can report no progress in

Portrait Photography.

The suicidal policy of price-cutting, adopted by the leading and well-to-do galleries to kill out their poorer neighbors, has produced evil effects, and poorer work is the result.

Instantaneous Photography

at night by aid of artificial light has many devotees, and not alone among amateurs. Magnesium in some form or other has been the main source from which the light has been obtained, and many and varied are the devices put upon the market for flashing the powder. Of late a new candidate has made its appearance, which bids fair to out-rival all others. I refer to the nitric oxide gas-flash, of which mention has been made in the different journals; it produces no smell or smoke.

Diffraction Photography,

the name given by Dr. John Vansant to photography without a lens, is receiving considerable attention, and is destined to prove of great value in the arts and sciences.

Photographic Objectives.

Two recent improvements in this line are by Messrs. Voigtlander and Dallmeyer. The former having constructed a new portrait lens, one of the chief merits of which is that it is absolutely rectilinear, and is said to be the first rectilinear portrait lens ever placed upon the market. The glasses of both front and back combinations are sealed, so that all diffusion and loss of light by reflection is successfully overcome. The focus is longer than heretofore, which enables the operator to pose his sitter farther from his instrument than has been his wont, thereby securing portraits which excel in correct and faithful reproduction of the features, brilliant and equalized illumination, true perspective and perfect definition, together with that round, soft stereoscopic effect which delights the eye of every true artist.

Photographers who do much at viewing have observed the fact that while their single lens would give fine, brilliant negatives of forest, rock and river views, architectural work required a different instrument.

Thanks to the advance made in the construction of photographic objectives, one lens will now accomplish all the above to the entire satisfaction of the most critical, Mr. Dallmeyer having invented and placed upon the market a single lens, which is absolutely rectilinear, producing great brilliancy and no "lapping lines."

In this new lens, the concavo convex and one meniscus are fitted together, while the second meniscus is reversed so that a double convex space (if such a term is admissible) is left between them. The lens sets back in the tube with the diaphragm in front; the angle is about 65 degrees.

Developers.

Several new substances are being put forward for developing the latent image on the exposed plate; foremost of which appears to be hydroquinone, as that chemical possesses good keeping qualities and is energetic to the last drop. We may look for it to become a general favorite; another thing being in its favor, that it can be prepared and used as a one solution developer, preparations of the kind being already upon the market. It will be well for photographers to give hydroquinone a trial.

Self-Developing Dry Plates

are now manufactured, upon the backs of which is a coating of some kind that holds a prepared pyro developer, therefore all that is necessary after the plate has received the proper exposure is to immerse it in a dish of pure water. Of the practicability of such a mode of working I am a little skeptical.

Photographers having learned how to better fix their negatives, there is less complaint of deterioration, and more durable negatives are the result.

Plain Paper.

There is a tendency among photographers to return to the use of plain paper for contact printing, in order to do away with the so-called inartistic polish of the albumen surface. It is more strongly advocated in foreign countries, and more largely practiced. Albumen paper, however, will continue to be used, at least, for another twelve months.

The Metric System.

Although not alone pertaining to the progress of photography, yet it is a subject agitating the minds of the fraternity the world over, and many of our best formulæ are published in that system ; therefore a remark or two upon this subject may not be out of order. While I shall not advocate either the metric or our own system of weights and measures, still there is great room for improvement in the latter.

A commission has been appointed to meet in this country for the purpose of adopting some means whereby the metric system shall be put into more general practice in the United States. Said commission will meet some time during the present year. Perhaps it would not be out of place for this Convention to give expression upon this subject.

Schools for Photography.

Germany has taken the lead in establishing schools, or more properly speaking, Colleges of Photography. One in Berlin, in charge of Dr. H. W. Vogel, and another in Vienna in charge of Dr. Eder. These colleges are supported by the Government ; the price of tuition being very small. Large and handsome buildings have been erected for the purpose, containing departments for every branch of the photographic art, where pupils can secure a thorough practical, as well as theoretical knowledge of the business in all of its branches, or those only he or she may elect to study and practice.

It is to be hoped that some influence will be brought to bear upon our own Government, whereby some of the surplus millions now in the treasury might be applied in the same direction.

The Photographic Journals remain about as they were one year ago, shedding abroad their light among the hive of workers, that all who wish may improve themselves.

There are, no doubt, some things of importance that have been overlooked, but as I have already occupied more of your time than I intended, I will thank you for your kind indulgence.

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All communications for the columns of the BULLETIN *should reach us on Monday preceding the day of issue, to insure their publication at that time.*

REDUCING THE DENSITY OF NEGATIVES BY VARIOUS AGENTS.

BY CHARLES EHRMANN.

[Presented at the Minneapolis Convention of the P. A. of A.]

OVER-DEVELOPED negatives yield hard prints, no matter how long sensitized paper may be exposed to light under them; but such negatives can be reduced to normal density, either locally or over the entire surface. To do this properly is as easy, and as difficult, as any of the important photographic operations requiring skill, circumspection, and a close observance of the process while it is going on.

When we first became acquainted with gelatine emulsion plates, owing to want of practice and experience many errors were made in the development, and in the majority of cases we produced but very feeble negatives from which, to make good printers, we learned to intensify. Others, however, were so excessively intense that printing from them in a reasonable space of time was quite impossible. To reduce undue density we resorted, in the beginning, to an old remedy that had served us well in the collodion process—a strong solution of cyanide of potassium, to which was added, occasionally, a trace of iodine.

To a certain degree this remedy proved to be quite efficient, but as its action is slow, and commercial cyanide of potassium invariably contains as much as from 20 per cent. to 25 per cent. of carbonate or hydrate of potassium, the gelatine film weakened, under its action, to such an extent that it sometimes even became detached from the glass plate entirely, resulting, of course, in a loss of the negative. The method might answer, however, if a chemically pure cyanide of potassium could be obtained.

To convert the excessively strong deposit of metallic silver into iodide of silver by means of an iodine solution, and subsequent re-fixing in hyposulphite of soda is, theoretically, quite correct, but can be done only with much care and attention by an experienced operator. The method is worthless when the reduction to iodide has been carried on but a trifle beyond the proper point. The hypo bath must necessarily take off more of the silver haloid formed than was intended, the negative becoming as a consequence, too feeble for printing.

Not much better did we fare with the method of reducing the silver deposit to chloride of silver by means of weak solutions of ferric-chloride. With the subsequent re-fixing in hypo, no more reliable results can be secured with this method than with that of iodide of silver. It is true that the conversion of the metallic deposit into chloride of silver has proved to be very useful in removing green and red fog, or discolorations of the film, excepting those caused by sulphides formed, but before a print can be made from the negative thus transformed into chloride, a re-development with ferrous-oxalate must be resorted to, which, however, by no means reduces the original density of the plate, but increases it very perceptibly.

Reducing through the transformation of the silver into chloride is risky, for many reasons. To judge approximately correct of the degree of the reduced intensity before re-fixing the plate requires a most experienced eye. An insufficient amount of chloride formed necessitates a repetition of the process, and when it is excessive, the whole proceeding results in a failure and the loss of the negative. If the negative has been primarily perfectly washed, the transformation into chloride of silver progresses uniformly and slowly, but the presence of a mere trace of hyposulphite of soda is an obstacle to success. Ferric salts (ferric-chloride) are reduced to ferrous by hyposulphurous salts, and if the negative has not been totally freed from the fixing agent, reduction into chloride can take place but imperfectly or not at all.

Reducing agents containing principally iron chloride and similar substances have been frequently proposed for practical use, and are, in fact, prepared and sold with great praise of their virtues. Apparently these media act well, slowly and uniformly, enough to allow of a perfect control, and with satisfaction to the casual observer. The chloride of silver formed, however, remains in the film, as it is not removed by fixing, as in the previous cases. What will become of a negative reduced in that way, and if a large edition is to be printed from it, I leave to every printer to decide.

Cupric chloride, formed when cupric sulphate and sodium chloride is applied to the negative, is just about as unreliable as any of those previously mentioned. The action is based upon the same principles. Owing to the copper salt the deposit formed assumes a non-actinic color, and unless the silver chloride is fixed away, and not even then, can great success be expected from the process. Dr. Eder has constructed a negative reducer, consisting of cyanide of potassium, iodide of potassium and mercuric chloride. Its action is similar to those we have considered, but an excess of cyanide of potassium dissolves the respective chloride, cyanide and iodide of silver formed, thus effecting the desired reduction of the negative deposit. Eder's solution is easily controlled in its action, but the reduction takes place slowly, an hour, or even longer, being requisite to reach the desired effect. Hence this process, with all its advantages, can never become quite popular in a very busy laboratory.

Farmer's solution, consisting of a mixture of ferricyanide of potassium and hyposulphite of soda, is probably the most generally accepted method to reduce over-intensity in negative deposits, as well as in printed paper proofs. It is controllable and safe, leaves no color-stains behind, and acts which such an energy that, after a short application, the whole silver deposit may be totally destroyed, leaving upon the glass a pure gelatine film without the least trace of an image. When ferricyanide of potassium, itself sensitive to light is mixed with hyposulphite of soda and then exposed to diffused light, only for a short time, the mixture will turn blue, and, owing to a separation of sulphur, turn milky. A part of the ferric salt is reduced to ferrous, hydroferricyanic acid formed, sulphur, Prussian blue, and probably hydroxide of iron, separated. Under the influence of light, Farmer's solution will soon become inactive, and should therefore be applied only in the dark-room, or in a much-subdued light. With proper precautions the solution has proved to be extremely active, and as its energy can be well controlled with the greater or less amount of the ferricyanide of potassium used, it has been almost universally adopted. The process is truly chemical, the ferricyanide of silver forming is dissolved in the hyposulphite of soda.

As a reducer for negatives it is effective when the general density of the plates requires modification, or when only a local reduction is desirable. The solution, mixed with strong gum-arabic mucilage, and applied with a soft brush to the parts to be reduced, gives, with a little care and dexterity, all desirable effects. Halation marks, excessively developed whites, and even flare spots or ghosts have been removed or subdued by it. For the reduction of paper prints, it is best to soak them in hypo solution and add gradually to it but small portions of the ferric salt.

Less successful has been its application to the Eastman permanent bromide paper, which, more or less, assumes a yellow tone with it. The method now to be spoken of giving more satisfactory results.

Not less effective than Farmer's solution, and preferable to it in many respects, is the method with potassio-ferric oxalate, proposed by Monkhoven, introduced and made practical by Belitski. Its peculiar virtues are that even by long-continued action no trace of color is left behind, therefore is more useful in reducing gelatine paper prints, like those upon the Eastman paper. It acts probably slower but more steadily than Farmer's solution, but as the action begins only when the entire film has been penetrated by it, reduction must not be carried to exactly the degree of intensity required, but somewhat below it; the solution continuing to act within the film for some time after the operation has been interrupted by washing the plate. Potassio-ferric oxalate is the beautifully green crystallized double salt of ferric-oxalate and oxalate of potassium, which is formed by oxydizing our ordinary ferrous-oxalate developer. If this highly energetic developer is exposed to air but a short time, the active ferrous salt takes up more oxygen, becomes ferric and ceases to be a developer. Hence, old or partly oxydized developer is quite frequently used as a restrainer, or to commence the development of plates suspected of over-exposure. By higher oxydation the oxalate developer loses part of its energy (ferric-oxalate does not develop). If, therefore, the ferrous salt remaining in the solution in lower quantity does the work, would it not be as well to apply for this purpose a freshly prepared ferrous solution containing an amount of the iron salt equivalent to that existing in the oxydized solution? But this does not seem to be the case. A peculiar virtue is displayed by the salt of higher oxydation; it possesses a restraining power by which most excessive over-exposures can be well controlled. The ferric-oxalate does not develop; it restrains, and will ultimately, under certain conditions, reduce the metallic silver deposit on plates developed with any of the known developers.

Before we consider the action of this reducer, it may be as well to describe the sources from which the valuable and beautiful salt is obtained, the more so as many practitioners have been prevented from using it on account of its scarcity or by being ignorant of its mode of preparation. Old oxalate developer exposed to air in open vessels will, after a short time, deposit potassio-ferric oxalate in the form of green crystals; it will do quite well to separate them from the solution, remove the brown iron oxyd adhering by washing in water, dry the crystals between bibulous paper and preserve them for use. But if it is desirable to recover the whole quantity of the salt, proceed as follows: Take the whole amount of old developer on hand, pour it in an evaporating dish and allow it to evaporate spontaneously in a subdued light. The resulting brown, powdery mass, interspersed with a multitude of green crystals of various size, is then to be mixed with one-tenth or one-fifteenth of its weight of crystallized oxalic acid, and, with five or six times its volume of water, boiled in an evaporating dish. The resulting thick and muddy liquid is filtered into another evaporating dish while yet hot, the dish covered up with paper, and set aside in a cool place over night. From it form beautiful crystals of a pure emerald-green color—the potassio-ferric oxalate.

The salt is sensitive; light reduces it again to ferrous-oxalate; it must, therefore, be kept in the dark. The salt can also be prepared by adding to a weak solution of ferric-chloride another weak solution of neutral oxalate of potassium, filtering the solution and crystallization. It is necessary to add enough oxalate to secure perfect neutralization. An excess of it will soon precipitate; an excess of iron chloride renders the resulting salt unfit for use.

The formula for reducing is simply to take 10 parts of the green crystals in weight, previously dissolved in as little water as possible, and add it to 100 parts of the ordinary hypo solution. When an over-intense negative is subjected to this compound, the reduction will take place slowly but perceptibly, and the process can, therefore, be easily controlled. The hyposulphite plays an important part. Without it the potassio-ferric oxalate does not reduce. A negative perfectly free from hypo may rest in a pure solution of the green salt indefinitely without any apparent effect. Remove the negative to a very weak solution of hypo and reduction will commence at once. Hence, it will be apparent that washing after fixing is not at all necessary when the negative is to be reduced.

The chemical process taking place has not been definitely stated, but the method is so secure, controllable, and in no case discoloring the plate, that it may well be considered of much practical value, more valuable, perhaps, than any other reducer.

I must not omit to mention, in connection with the chemical reducers which we have considered, one whose action is merely mechanical. I refer to the method of rubbing down excessive intensity by means of a linen rag moistened with alcohol. Friction reduces density by taking off particles of the silver deposit. The intelligent negative-retoucher can by this means produce very fine effects and make visible modulation quite obscured upon the crude negative.

◆

Foreman, rushing down stairs.—"Where's the fire alarm key? Get the engines; the press-room is blazing." Appalling aggregate of the fire loss editor.—"Get nothing. Don't you know we are 'way behind in our fire loss this month? Put on some hand grenades, quick, or the fire may go out."

PHOTOGRAPHY AS A FINE ART.

BY ENOCH ROOT.

[Read before the Minneapolis Convention.]

Do photographers, as a class, realize what a wonderful and beautiful profession they are engaged in; what capabilities, progress and possibilities are found in this most fascinating art-science? Where is there its equal in the whole range of earthly pursuits? Comparatively of recent birth, not a year passes that some new and astounding discovery of its use is not promulgated; and this not confined merely to pictorial representation, but running through the whole range of the arts and sciences. Where will its advancing steps be arrested? None can tell; but we may confidently look forward to continued progression into new fields of usefulness and beauty yet unexplored.

But the crowning glory of its future, whatever else may follow, the one element that is to give grandeur and dignity to its pursuit, are concealed in its art possibilities. It therefore behooves the craft in devoting all due attention to its technique not to neglect so essential a feature of their progress as the esthetical. It is only by this means that the true position of photography as a fine art can be claimed and maintained. That so many persons are disposed to deny the attribute of art to photography is chiefly owing to the apathy and insensibility in this respect that exists among such a great number of the artisans of the profession, who pay scarcely any heed to its purely artistic expression.

Mere manipulative skill in producing highly finished work is not art, although a most desirable and praiseworthy requisite in obtaining the favor of the general public. But that public is becoming day by day more cognizant of other desirable qualities; and the time is not far distant when fine polish and excessive characterless retouching will no longer serve to conceal awkward posing, bad lighting and inartistic arrangement.

Who among our photographers are alive to this awakening? Of the hundreds who yearly leave their business to attend these conventions, or, obliged to remain at home, take an interest in the proceedings through the various reports, there is much to hope from; they are at least in the line of learning the needs of the present and can foretell those of the future. But how about the other large army of fellow-workmen who exhibit no interest in this society devoted to their advancement, and, as a rule, scarcely ever read any of the most excellent and instructive photographic periodicals, which contain so much information that is essential to the success of a live photographer? These are among the class that argue that even though they should make their work more artistic, it would not be any better appreciated. "Why waste time in giving a quality to work from which no pecuniary advantage is to be derived?" But is there no such incentive as pride, dignity or satisfaction in superior work, aside from the amount of money it will produce? Your patrons may be among those that a good likeness will satisfy, although it may be false in almost every other respect. But how about yourself? Are you satisfied? If so, it is idle to waste words in your interest.

To succeed exceptionally in any profession, one must become something of an enthusiast. But this must be turned to some practical end. If you love your profession, make a study of it in all its bearings the aim of your existence. Turn all your leisure moments to reading, not only all the purely photographic literature, but extend it into the field of art, even if it embraces subjects that seemingly have no practical connection. Seek inspiration in such writers as Ruskin and Hamerton, your light reading with such novelists as William Black, and practical knowledge in such books as Burnet's "Art Essays." Learn all the principles of art contained in the study of composition, light and shade, invention, arrangement, form, harmony, unity, perspective, etc. In these are contained the secrets of successful posing, grouping, lighting, accessories, and the various component parts that make up an artistic photograph. Remember that to make a fine art of photography, all this knowledge is indispensable. Its artists must have as perfect an understanding of the general principles that underlie all high art as is required by successful painters and sculptors. In other words, they must possess all the theory of the latter, and in place of their necessary skill with the brush or modeling tool, the photographer must have an equal proficiency in the use of the camera and developing tray.

We admire the dextrous ability of a proficient draughtsman. It demands a long, severe training of the eye and hand to acquire superior attainment. Yet drawing without thought or feeling is no higher in rank as an art than the use of the camera. Neither in themselves are more than mechanical arts. They are simply the artist's tools, the means to an end, the words by which the language of art is conveyed and not the thoughts to be expressed. A mere copy by imitation, either with the brush or lens, might be perfectly accurate and still be a very low order of art. But when artistic knowledge and judgment are used in the arrangement and selection of the most expressive, and rejection as far as possible of the least important and objectionable features, when the artist is inspired by love and feeling that is so guided by knowledge as to impress a personality upon his work that marks its superiority, then, no matter how humble the means, it embodies the elements that constitute a fine art, whether it be found in a photographic print, the wall-paper of a Morris, the coarse clay of the potter of Tanagra, the glass ware of Murano, the metal work of Benvenuto Cellini, or the canvass of a Titian.

In claiming art in photography there is no denying that it has serious limitations. It is sadly hampered in the direction of selection, rejection, invention, and in the means of technical execution. It would be as absurd to insist for it a capacity of expression in the highest realms of creative and imaginative production as to deny it any adequate art capabilities. Yet its confines lie very near and will encroach in the future more and more upon the province of the inventive spirit, although from the nature of its execution, its greatest triumphs will ever remain in a realistic presentation of nature. Its appeal to the love of the beautiful and the higher sentiments must be through an artistic representation of facts, rather than to a stimulation of the ideal. But is not this in accordance with the growing spirit of the age? Has not classicism and romanticism been obliged to give place to naturalism both in literature and art?

Because the photographer is confined to a narrower field than the painter, is he to be denied the title of artist, when, by a display of the same power and knowledge as the latter, he produces artistic results? Granting that the great majority of photographs produced throughout the country are not works of art, but are the thousands of crude daubs, called oil paintings, that are hanging on our walls any more entitled to that appellation? Decidedly, no. They are not even respectable company for the children of Daguerre. As poor as are the productions of some photographers, any of them are eminently superior to such trash, inasmuch as a mechanical production of the camera must have some semblance to nature, while a mechanical painting seldom has any resemblance to anything celestial or mundane.

But with all the difficulties above enumerated, the photographer has some compensating advantages not enjoyed by the painter. The latter, in order to express something more than the broadest truths of nature, must devote much time and severe labor to the elaboration of details. Thus the happy inspiration of a moment is often lost in days of tedious manipulation. But the photographic artist has only to place his model in just the right light, secure a graceful pose, arrange his accessories with due regard to the composition, determine the most harmonious lines for the draperies, and watch for a favorable expression—all of which require the keenest artistic perception and knowledge—and then the mechanical lens almost instantly fixes his conception. There is no time for shifting lights, disarranged draperies or tired-worn expression.

Then, with the enthusiastic landscape photographer in his search for the picturesque, how often does his artistic instinct discover beautiful views already composed by nature? Perhaps he may have a short time to wait for certain shadows to lengthen, or lights to fall into masses so as to bring unity and breadth into his composition; or he may spend a time in search for the most favorable location for his camera so as to embrace a foreground that will harmonize with the distance. But, this obtained, the faithful sun-god speedily records it upon the sensitized plate.

The landscape painter, who wishes to obtain a transcript of this same scene, follows precisely the same governing rules in his selection. He seats himself at his work. An hour is spent in making a rough sketch, and he begins to use his colors. In the meantime a constant change has been in operation in the view. The lights and shadows have assumed new relations to each other. It is no longer the picture that first attracted admiration. Its superior picturesque effect has departed. The artist is now working from memory, and even this is confused by the new, ever-changing view presented. If he wishes to obtain anything like a finished study, he must spend several days in working here for a short time at the opportune hour. A week of cloudy weather may intervene before the arrival of another such a day when the effect is similar.

In the meanwhile the photographer has continued his rambles. A mass of flying clouds sweep across the heavens in an "innumerable multitude of forms" or by the restless sea the long undulating waves sweep majestically in upon the beach or break into an infinitude of life and motion upon the resistful rocks. Snap! and another prize is won from Nature's domain. How much of this flying movement of vapor or wave could the painter have seized? In fact, it is by instantaneous photography that the present pictorial representation of the moving forms of the sea and sky have been rescued from the conventional symbolism of the past, and their wonderful phenomena produced with so much of their real life and character.

In this necessarily brief paper, the full importance of the subject can barely be touched upon, but there are very many cogent reasons, that cannot now be enumerated, why it should receive more universal attention. Suffice it to say, that if the photography of the future does not attain a more worthy and high position as a fine art, it will be owing more to the neglect of its devotees, than through any failing in its art capabilities.

LOOKING BACK; OR, THE OLDEN DAYS OF PHOTOGRAPHY.

BY H. H. SNELLING.

(*Continued.*)

III.

But we are not yet done with the first decade. During the last half of this period and the first quarter of the second decade, the daguerreotype was in its glory, not only for its perfection as a picture, but in its popularity with the intelligent and wealthy. The wonderful results attained by such men as Anthony, Brady, Bogardus, Ferris, Harrison, Gurney, Lawrence, Beckers, and a few others in New York City, whose names we fail to recall on the instant, completely dispelled the many false notions of the daguerreotype entertained by the people. The galleries of the gentlemen named were no longer the resort of those who came to "get their likenesses (some pictures) taken, but were visited by the intelligent and educated not only for their own counterpart presentments, but also as they would visit art galleries to admire and enjoy the excellencies and beauties of the daguerreotype.

At this time the daguerreotype had attained one perfection that had much to do with the change in the estimation of the class mentioned, perhaps more than any other improvement. By the adoption of a new system of backgrounds the image on the plate was brought out clearer and better defined while the disagreeable glare of the silver surface, which before required a particular point of view or obliged you to hold the picture in a particular manner, was destroyed and the eye was not wearied in the effort to see the image. This latter defect was one of if not the great trials of the early daguerreans, but its removal was suffered quietly to work its way into public favor and estimation. If our memory serves us right, Mr. Hecler, of Galena, Ill., was the earliest to combat and overcome the evil.

The American daguerreotype had now attained the character of unsurpassed excellence all over the world, yet the most intelligent, active and enterprising men in the business were constantly on the alert for improvements and experimenting for new methods, and many were introduced. It is unfortunate for the present that there was no publication at that time in America or Europe in which to record the discoveries and inventions of the first decade, and the subsequent overthrow of the silver plate by the collodion has destroyed all interest in them, yet, as matter of history, they should have been preserved. It seems to us that all these facts might be collected; if so, they should be a very interesting chronological history of photography from its genesis to the latest hour might be compiled and prove valuable as a reference book. We will get off the track once in a while—such are the vagaries of the mind—and being simply suggestive may set some one a-thinking.

In 1843 an event transpired that proved to be the forerunner of many other events of interest and importance. Up to this time the manufacture and sale of daguerreotype apparatus and appliances was confined to two or three firms, who considered themselves, quite justly to all appearances, to supply the demand, and when Mr. Edward Anthony sold out his interest in the Daguerrean Gallery of Anthony, Clark & Co. and joined their ranks, many doubts were expressed as to the wisdom of the act; "there were too many in the business already." It proved, however, to be a "new departure" in the right direction, and added an impetus to the entire business of making daguerreotypes that photography has not got over yet, and, probably, never will, judging by the events as they pass.

Like all such business apprehensions, the fears of the other stock dealers were groundless. Mr. Anthony's methods of doing business not only built up his own but materially improved theirs. At first he was not disposed to become a manufacturer, but it was soon evident that nothing less would suit the daguerreans. One branch of manufacture after another was added to his business until it assumed the largest proportions, and his goods were sought after wherever the daguerreotype was made. His spirit of enterprise always went in the right direction, as our old veterans all know, and as a consequence there was more rapid processes in photography, both as to excellence of the work, the increase of first-class operators, than before he entered the line of manufactures. The Messrs. Scovill were largely engaged in other manufactures, and did not give that attention to photographic appliances which they afterwards felt obliged to, while the Messrs. Lewis confined themselves to apparatus. Others did not fall in line until later. We shall have more to say on this subject as we proceed, contenting ourselves now with the remark, that is gratifying to make, that there are no business firms in this country that stand higher in all the qualities of business men than those we have here mentioned. Our readers must remember that we are writing of the "long-ago" past, and not take umbrage at the omission of those who are of more modern date.

IV.

The rapid progress made in the business of the photographer—or, rather, the daguerrean art, as it was called at that time, was something phenomenal, I may say somewhat marvelous in the history of business, particularly from the date when Mr. Anthony commenced the importation of daguerreotype plates—in such large quantities as to considerably reduce their price—and other photographic apparatus and appliances. Previous to this, daguerreans mainly depended for these, especially the appliances, on a few French importers, who were not disposed to calculate on very large sales or rapid increase, and therefore maintained high prices and, of course, many of these articles were looked upon as luxuries too expensive for the general trade.

The Messrs. Lewis, of Chatham square, New York City, were the principal manufacturers of apparatus in this country, and their goods were superior to those imported, so that the latter did not long hold our market.

Previous to this, however, daguerreans increased and multiplied somewhat faster than the demand, which soon had its effect on prices then obtained by first-class daguerreans, but, although the increase of daguerrean galleries all over the country still continued in undue proportions, not even the great fall in prices mentioned in our former article, prevented such artists as Brady, Gurney, Morand, Bogardus, Lawrence, Clark, Beckers, Ferris and Harrison, of New York City; Black and Hale, of Boston; Richards, of Philadelphia; Whitehurst, of Baltimore; Barnard, of Syracuse; Davie, of Utica; Rider, of Cleveland; George Y. Cook, of Charleston; Park, of New Orleans; Fitzgibbon, of St. Louis; Hesler, of Galena; Landy, of Cincinnati; and many others whose names I fail to recall at the moment, by the excellency of their work, to maintain good prices.

Dealers in photographic material and supplies of course multiplied with the daguerrean artists. At the end of the decade we had the Lewis Brothers, the oldest manufacturers in the land; the Scovill Manufacturing Company; Holmes, Booth & Hayden, and E. Anthony, in New York; Benj. French and John Sawyer in Boston; William Shew and Dobbs & Birmingham, of Philadelphia; and Peter Smith in Cincinnati. Others have escaped my memory.

For several years the Voigtlander and some French camera lenses held the market, the former taking the lead for excellency, but suddenly C. C. Harrison stepped to the front, and under the fostering of Mr. Edward Anthony soon gained a high reputation, increasing in excellency and elegance to the time of his death. Mr. Harrison was a young, self-educated optician. Although a large man he was not physically strong, and he soon succumbed to his devotion to hard study for the improvement of his lenses. He died while still young.

Early in 1849 the first bound book on photography issued from the press in this country was published by myself: "The History and Practice of the Art of Photography" had a rapid sale, and soon passed through four editions of 1,000 each, and each forming a larger volume than its predecessor. The eagerness with which the daguerreans of that day seized upon everything that would increase their knowledge of the art and enlarge their facilities for improvement and skill in their productions gave evidence of the intelligence that predominated among them. As a matter of course there were many of the self-wise who knew all they wanted to know and had no favorable opinion of book learning; they could make good likenesses without books.

It was about this time that a class of men arose who, being too lazy to work, became perfect leeches among the fraternity, traveling through the country selling receipts and processes which they picked out from the very books the self-knowing repudiated, or filched them from the intelligent daguerreans in the large cities in whose galleries they lounged for the purpose, but with the avowed intention of becoming a pupil. The result, as a matter of course, was that the self-knowing were the victims of these sharpers, not only in the country, but in the large cities. We remember one case in New York that was amusing although very provoking. One of these sharpers hung around one of the large galleries—we won't use names—until he obtained the operator's method of coating his plates. He seemed to know just where to go, for he went into a minor gallery and sold his information to the proprietor for five dollars. The fact that it was Mr. ——'s way was all-sufficient, yet it "did not work in my hands better than the method I had been using." I make no reference in this paragraph to those who were legitimate inventors of new processes or new styles. These latter, however, excited the ire of very many daguerreans for taking out patents and making merchandise of the fruits of their brains. In their minds the example of Daguerre should always be followed. The fact that Daguerre received a handsome pension from the French Government for giving his discovery to the world, and that our inventors had to depend on their own recompense—government premiums not being awarded for inventions—had no effect on their irritability.

One of our pastimes during our hours of leisure in those days was to visit the minor galleries and look at the "pictures" hung up as specimens of the work done within. Here is a double-headed man, made by exposing the sitter with his head leaning to one side for half the time and then changing the head to lean to the other side. And skillfully done it was, too. It was quite a curiosity and attracted much attention, one man remarking, "That is the greatest curiosity I ever saw. Barnum ought to have that man." "Yes," said another; "I would give fifty cents to see the original of that picture." Here was a savage-looking old codger leaning back on his chair with the air of one casting defiance at the camera, and saying, "Shoot and take my head off; I ain't afeared." "What did you say you shot with?" "With the rays of the sun," answered the operator. "Well, them's pretty hot; never mind, shoot away." One gallery was partial to actors and actresses, in full character costume, but what figures they did cut; flying sylphs in chalk and silver, with ethereal gauze pinned to material solidity. Ophelias with disheveled hair filled with wheat, with a rigid smirking face peering from beneath. Ancient kings in pawnbroker's costumes, and queens in flowing robes of buckram stiffness; all so well exposed to the light as to ignore shadow, and give the features a ghastly look. These were the specimens intended to attract public attention and draw custom. It is no wonder, therefore, that the artistic daguerreans were constantly on the alert to discover some process of production giving the finest of results, that would be beyond the reach of such charlatans and give them no competition except from their equals in artistic taste and skill.

Early in this decade the mind was turned to the possibility of reproducing on the silver plate—or other medium—the beautiful images of the ground glass and fixing them in all their brilliancy. At one time even Daguerre and Niepce turned their attention to experiments in this direction, and published methods which they thought would result in the reproduction of this image and pictures in the natural colors obtained. Other French scientists and chemists devoted much time to the solution of the problem; some of them going so far as to announce their success in discovering the proper method. The excitement ran high throughout the daguerrean world at these announcements, and was kept up by the frequent promises of the pretending discoverers to soon give them to the world, but they at last quietly sank into oblivion. Niepce, probably, came the nearest to success in producing the different colors on the silver plate, but owing to his inability to fix them, he made no attempt to reproduce the image of the ground glass. As a matter of curiosity we give the following process, published in 1849, with the assurance that pictures in colors could be obtained by it, but we never saw or heard of any attempt to make it available as a business venture:

"Take a polished plate of copper and expose it to the vapor of iodine or bromine, or the two substances combined, or either of them in combination with chlorine. This gives a sensitive coating to the surface of the plate, which must then be submitted to light in the camera. After remaining a sufficient time in the camera, the plate is taken out and submitted to the vapor of sulphuretted hydrogen. This vapor produces various colors on the plate, according to the intensity with which the light has acted on the different parts; consequently a colored photographic picture is obtained. No further process is necessary, as exposure to light does not affect the picture.

"By this process we have an advantage over the silvered plate both in economy and in the production of the picture in colors."

While the desire for producing daguerreotypes in the natural colors was intense, very little faith in its possibility caused very little attention to be paid to all such publications, particularly when not accompanied by practical demonstration and specimen pictures. Professor Seely followed out some of these processes experimentally and decided against their availability.

There was a rumor about this time that a man in the mountains of New York State had discovered a process for taking daguerreotypes in the natural colors, but they did not take definite shape until some time later. The resort to the pencil and powdered pigments was a poor substitute for the brilliant image of the ground glass, but as it pleased the public it was generally practised, often to the detriment of otherwise excellent daguerreotypes.

The accomplishment of instantaneous daguerreotypes was another problem that exercised all minds more or less at this time, and camera time was considerably shortened with bromide of lime and other sensitizers. An attempt was made to use galvanism with partial success, for which purpose we invented a camera box, and experiments made with it proved its practicability, but its costliness debarred its use.

Mr. Robert R. Whitney, however, by a process of his own, which he describes in our "History and Practice of Photography," claimed to have produced instantaneous results in this manner. But while this method was being discussed and experimented, a Mr. Cyrus announced a "magic buff" which would give instantaneous daguerreotypes, and the proof being established of their efficiency, they soon took the market and sold readily at twenty-five dollars a pair, until their secret came out, and beef suet was found to be the magic substance. Men seeking the solution of difficult problems, as a rule, take the most intricate and difficult methods when more simple means will accomplish the purpose; and these means are seldom found by research, but are accidentally discovered, or, under certain circumstances, suggest themselves. The announcement of the "magic buff," particularly as it proved a genuine success, created a great deal of excitement and delight, but when their secret was made known an equal degree of merriment was indulged, and poor Mr. Cyrus not only lost his twenty-five dollars a pair, but had to take in exchange any amount of ridicule; nevertheless he was not without many thanks. The truly instantaneous daguerreotype was still, however, an unaccomplished fact, but the time in the camera came pretty close to it, sufficiently close for all practical purposes, and for the quality of the picture.

But our first-class daguerreans were getting tired of contending with the "Cheap Johns" of the art. They could not and would not compete with them for public favor, and the complaints of customers at the higher prices charged, and their pleadings for reductions were annoying and disagreeable, so that their desires were continually for something in which their skill and workmanship would find ample reward. The experiments in paper photography were, therefore, watched with interest and hope. Yet, with the exception of Mr. Whipple, Mr. Black and a few amateurs, very little was attempted in paper photography on this side of the Atlantic.

(*To be continued.*)

MODERN PHOTOGRAPHIC ENGRAVING AND PRINTING.

BY GEORGE S. WATERLOW.

[Read before Camera Club Conference.]

The subject of the modern application of photography to the art of engraving and printing is one of stupendous interest to all communities, of immense value to future generations, and teems with interesting details. I cannot but feel that within the compass of this short paper which I have the honor to place before you this evening, it is not possible or desirable that I should attempt any historical account of the various researches and experiments which at the present time place us in possession of the means of illustrating by practical and easy methods every subject of art, life and nature, methods but vaguely dreamed of a generation ago, even by the most sanguine enthusiasts.

Neither should I endeavor to criticise the merits of specific processes or the busy researchers themselves, but I am here simply to describe to you as concisely as possible some of the means by which to-day we may produce illustrations of every description through the powerful agency of the camera.

First.—I will take the names of some of the various methods, and then describe the practical working of each as plainly as I can, avoiding the use of technical terms.

Modern Photographic Engraving and Printing may be divided into four heads:

1. Typographic Blocks, which are etched in relief, and printed from the surface in an ordinary printing-press.
2. Plates, which are etched in intaglio, and printed from the depth, as in the case of an engraved copper-plate.
3. The Woodbury Blocks, which are impressed with an intaglio image by a gelatine relief under great pressure, and printed from by a special press.
4. Collotype or Albertype Plates, *i. e.*, a surface of gelatine on glass or metal, which has been sensitized, acted upon by light through a negative, and is printed from in a hand or steam-printing press.

The most important of the many photographic methods now before the world for mechanically producing prints on paper in the printing-press is that which is popularly named photo-zincography, and is the first referred to on my list.

Before proceeding to a description of the working of this useful process, I might explain, for the benefit of the tyro, that nearly all the results obtained by these processes are founded on the simple fact that gelatine, in the presence of salts of chromium, is rendered insoluble in exact proportion to the amount of light allowed to fall upon its surface. In this peculiar property of the organic substances previously soluble in water, as in the case of gelatine, lies the whole secret of nearly every photo-mechanical process, and in its various modifications lie the initiatory stages of all the different categories just mentioned to you.

I will briefly explain this action. Suppose I dissolve ten grains of gelatine in an ounce of water, and add ten grains of bichromate of potash (K_2Cr_2O), then coat a sheet of smooth writing-paper with the mixture and dry it in the dark. On now exposing this piece of prepared paper under a negative of a drawing in lines for, say, ten minutes in sunlight, I obtain a faint image or print of the drawing in insoluble gelatine, because wherever the light has penetrated the clear parts or lines of the negative it has, through the addition of the bichromate of potash so oxidized and changed the nature of the gelatine that it cannot again be dissolved even in hot water. But there is yet another valuable property to be mentioned in connection with this oxidized gelatine, and that is its capability of taking printing-ink. Suppose I take this exposed piece of gelatinized paper, acted on by light as mentioned, and soak it for a few minutes in cold water, then roughly drying it with blotting-paper, lay it on a flat board, and, taking a roller charged with printers' ink, pass it gently over two or three times, I shall find that the exposed lines will greedily take ink from the roller, whilst the unexposed or white parts will refuse the slightest particle. I shall now have a facsimile copy of the lines of my negative in printers' ink on the gelatinized piece of paper, and if the ink I used were what is known as transfer ink, the inked piece of paper would be a photo-litho transfer, and ready as soon as dry for laying down upon a lithographic stone for printing from in the ordinary way, or, if desired, a plate of zinc might be substituted for the lithographic stone, and by passing the zinc plate through a press in contact with the transfer, the greasy ink would leave the gelatine and attach itself to the zinc, giving a plate ready for the photo-zinc etcher to make into a typographic block.

Having thus roughly sketched the general principle of the foundation of nearly all photo-mechanical printing, I will briefly discuss the processes referred to, and endeavor to describe the working.

As I remarked, the most important process, owing to its simplicity and cheapness, is that of photo-zinc etched blocks for ordinary typographic printing. I can, of course, only simply state the generally employed method of producing these blocks, and slightly touch upon the other subjects within the limits of this paper. For exact formulas and details for successfully working any one of these processes, I must refer you to specialists who make these arts a life study and to the few works at present published on the subjects.

First, then, the operations of etchings a type block, say from a line drawing.

The drawing intended for reproduction is pinned on a board and placed squarely before a copying-camera in a good even light. The lens used for this purpose must be capable of giving a perfectly sharp picture right up to the edges, and must be of the class called rectilinear, *i.e.*, giving straight lines. The picture is then accurately focused and brought to the required size; a plate is prepared in the dark room by the collodion process, which is then exposed in the camera for the proper time and developed in the ordinary way; after development, the plate is fixed and strongly intensified in order to render the white portions of the drawing as opaque as possible. On looking through a properly-treated negative of this kind it will be seen that the parts representing the lines and black portions of the drawing are clear glass, and the whites representing the paper a dense black. The negative after drying is ready for the next operation; *i.e.*, printing upon zinc. This is done in several ways. One method will, however, be sufficient for the purpose here. I obtain a piece of the bichromatized gelatine paper previously mentioned, and place it on the face of the negative in a printing-frame. This is exposed to sunlight (if there is any) or daylight for a period varying from five to thirty minutes, according to the strength of the light. This exposed piece of paper is then covered all over with a thin coating of printing-ink, and wetted in a bath of cold water. In a few minutes the ink leaves the white or protected parts of the paper remaining only on the lines where the light has passed through the negative and affected the gelatine. We now have a transcript of the drawing in printing-ink on a paper which, as soon as dry, is ready for laying down on a piece of perfectly clean zinc, and passing through a press. The effect and purpose of passing this cleaned sheet of zinc through the press in contact with the picture on the gelatine paper is this: owing to the stronger attraction of the greasy ink for the clean metal than for the gelatine, it leaves its original support, and attaches itself strongly to the zinc, giving a beautifully sharp and clean impression of our original drawing in greasy ink on the surface of the zinc. The zinc plate is next damped and carefully rolled up with a roller charged with more printing-ink, and the image is thus made strong enough to resist the first etching. This etching is done in a shallow bath, which is so arranged that it can be rocked to and fro. For the first etching, very weak solution of nitric acid and water is used; the plate is placed with this acid solution in the bath, and steadily rocked for five or ten minutes. The plate is then taken out, washed, and again inked; then it is dusted over with powdered resin, which sticks to the ink on the plate; after this the plate is heated until the ink and resin on the lines melt together and form a strong acid-resisting varnish over all the work. The plate is again put into the acid etching bath and further etched; these operations are repeated five or six times, until the zinc of the unprotected or white part of the picture is etched deep enough to allow the lines to be printed clean in a press, like ordinary type or an engraved wood-block. I ought, perhaps, to explain that between each etching the plate is thoroughly inked, and that this ink is melted down the sides of the line, so as to protect the sides as well as the top from the action of the acid; were this neglected, the acid would soon eat out the lines from below. The greatest skill and care is therefore necessary in this work, especially so in the case of some of the exquisitely fine blocks which are etched for some art publications.

There are many details which are necessary to successful etching, but those now given will be sufficient to convey to you generally the method of making the zinc plate for the typographic block. After etching, there only remains the trimming of the zinc, a little touching-up, and mounting it on a block of mahogany of exact thickness to render it type-high, and it is now ready for insertion with type in the printer's form.

From a properly-etched plate, hundreds of thousands of prints may be obtained, or it may be electrotyped or stereotyped and multiplied indefinitely.

The next process on my list is engraving on copper in intaglio. There are many names now in vogue for this beautiful process, but it is best known by that of "Photogravure." The difference between an intaglio and relief engraving is implied by their names. In the one we are now to deal with the lines or ink-carrying parts of the plate, are sunk below the surface, instead of being highest, as in the case of relief or type blocks.

The great advantage of this process in point of beauty over that of zinc surface blocks is, that we are able to reproduce a drawing which is made with washes instead of lines, a painting, or a photographic portrait or landscape; but for commercial and general purposes it is not so useful as type-blocks, because of the expense and slowness of the printing. The ink has to be rubbed into the lines and hollow of the plate, and the surface perfectly cleaned for every impression.

There are many methods of producing these plates by the aid of photography, but details of most of them are either unpublished or are worked as secret processes. I shall, however, be able to indicate the method to you in general terms.

Instead of a negative, a positive on glass is required for the first operation. This positive must contain every gradation of tone in the original, and be as nearly perfect as possible. Next, a solution of gelatine, sensitized with bichromate of potash, and containing a graining matter, is thickly spread over a glass plate and dried; when dry it is stripped from the glass and placed with the glass positive in a printing-frame and strongly printed. After printing, the film of gelatine is attached to a metal plate, and developed with water like a carbon print; when sufficiently developed, the film is allowed to dry; on examination it will be found that the picture appears in the form of little elevations and depressions over the surface, the blacks being the highest and the whites almost bare metal, each gradation of tone in the positive being a different elevation in the gelatine. This film may now be brushed over with powdered graphite and placed in the electrotyping bath, and a printing copper-plate produced.

Another method is to sensitise the surface of the copper itself with the same grained bichromatized gelatine, expose it under a positive, and bite through with "perchloride of iron"; the etching fluid passes through the parts projected from light by the positive, and etches the copper in exact proportion to the solubility or insolubility of the exposed gelatine surface. This is the simplest of the many processes, and it answers well for a small number of printings, but it is not deep or strong enough for mnch hard work.

I now pass to a different photo-mechanical printing—*i. e.*, Woodbury printing.

This ingenious process is, like the others, founded on the peculiar oxidizing action of gelatine in the presence of bichromate of potash; the process has now been before the world so long that most of you will be familiar, if not with the actual process, at least with its production. Great credit is due to the originator of this admirable process, and for the complete and practical issue to which he brought it.

Gelatine with bichromate of potash is spread upon leveled plates of glass, dried, and stripped; the film thus obtained is exposed to light under an ordinary negative; the film is then cemented, face down on glass, and washed for several hours with hot water. After being allowed to dry, the film is again stripped from its support, and presents the appearance of a delicate piece of silk, with an exquisitely modeled picture in fine relief. Its texture, delicate and fragile as it may appear, possesses extraordinary strength, and in the next operation is subjected to a pressure of hundreds of tons in contact with the hardest steel, and comes out of the ordeal unharmed, and ready to be used again and again without injury. The printing-plate or block is made of hard, rolled lead, and is placed face down on this gelatine film or relief on a steel block in a powerful hydraulic press, where it receives immense pressure—often that of 500 tons. The raised image on the gelatine is thus forced into the lead plate or block, and gives a mould ready for the special printing it is to receive.

The printing is rather difficult to explain. The lead mould is laid on a plastic cushion on the bed of a small press, and its face brought up almost, but not quite, with a sheet of plate glass cemented to an iron lid (or platen) hinged on the top of the press; the hinged lid is lifted by the printer and he pours on the mould warm ink, made of gelatine and coloring matter. A sheet of prepared waterproofed paper is laid on the pool of ink, and the lid shut down and clipped by a lever motion; this spreads out the gelatine ink over the entire mould, squeegees it away from the highest parts, or whites, and leaves it only in the hollows, or dark and toned parts of the picture. In a few minutes the warm layer of ink cools and sets, and on the press being opened, the sheet of paper with the ink from the mould adhering to it is carefully removed. This is the Woodbury print, and now only requires drying and and fixing in alum to make it the finished permanent photograph which is so familiar to all.

We now come to collotype printing, and it is perhaps of all methods of photo-mechanical printing the one which lends itself to the greatest variety of effects; every one of the previously-mentioned processes can be closely imitated by it.

It is, above all others, the best process for facsimile reproductions in large numbers, reproducing an engraving, a line drawing, a wash drawing, a photograph of nature, or from life, all with equal facility. The principle of the process is, as in the others, founded upon the altered nature of gelatine with bichromate of potash after exposure to light, but in this case differing from those mentioned previously in the fact that the printing begins and ends with the original gelatine surface. It is very simple—a thick sheet of plate plass (sometimes metal is used) generally, but not necessarily, ground on the surface, is first coated with a substratum containing silicate of soda and albumen (15 to 1) which has a great holding power; when this coating is dry, the surface is recoated with a solution of gelatine and bichromate of potash, and dried quickly in a hot dark room, or chest. The plate is now ready for exposure under a negative (either a collodion or ordinary dry plate), which must be reversed. After proper exposure, according to the density of the negative, the plate is thoroughly washed in water and dried; only a faint trace of the image or picture can be seen on the plate at this stage. It is now placed in a printing-press (generally lithographic) damped with water, and a leather roller charged with printing ink passed carefully over the plate.

Now is seen most clearly the curious and interesting action of light upon the prepared gelatine—the gelatinous surface receives the printing ink from the roller in exact proportion to the amount of light that has passed through the different parts of the negative, *i.e.*, where there are blacks in the picture the plate inks up solid; where white, it will take no ink at all; and where half-tones exist, it takes ink in the same gradation all over the plate. It only remains now for the printer to lay a sheet of printing-paper, smooth or rough, upon the plate and to pass it through the press. The result will be a collotype print. One can also print excellent copies of any subject upon calico, linen, satin, and other fabrics. A good plate will give four hundred to five hundred copies, sometimes one thousand. Ink of any color may be used and any paper. The prints may be varnished and mounted like ordinary photographs, or they can be printed on paper with white margins, like an engraving.

With these few remarks I conclude my paper. These arts, but briefly described, which have, as I have stated, numerous allies, open a field for further advancement beyond the limits of ordinary speculation.

They already have created an industry which capital has not been slow to encourage, and which gives employment to thousands where only twenty years ago but a few were earning by it a livelihood.

Through these means our homes are enriched with true copies of works of art, and at a low cost even the poor man has within his reach illustrations with which to cover the walls and educate his taste. And who shall gainsay that through photography may future generations receive the greater blessings that accrue to human life by the mind being raised to higher and better aims through the refining influence of art and knowledge?

From the camera and its allied arts, cheap and faithful pictures are placed within our reach, of art in its highest forms, of the beauties and the wonders of the world we live in, of our mountains, rivers, seas and lakes, our cities in countries of every clime. Nature in all its grandeur, life in all its detail, is spread at our feet.

DISCUSSION.

Mr. Jerome Harrison asked if we were likely to get photo-mechanical blocks fit for rapid steam printing.

Captain Maycock made some remarks on Sergt.-Major Husband's process, a photo-lithographic one in half tone, full working details of which had been published in the photographic journals, and which was practically and extensively used at Chatham.

Mr. Valentine Blanchard said that the lecturer's remarks about woodburytype were of the most vivid interest to him, for he had been present at the first demonstration of the process. What most struck him in the present examples was the very small amount of relief that seemed necessary; whereas, with earlier examples, they were veritable intaglios.

Dr. Lindsay Johnson had found collotype of great use in representing diagrams with great ranges between black and white. He handed round some optical diagrams in support of his views.

Mr. Wood said that they were much indebted to Mr. Waterlow for the extremely clear manner in which he had laid the subject before them. He could only reproach him with having cut the subject too short. He would have liked very much to have heard the lecturer's view on half-tone relief-blocks. He thought the future of photomechanical work laid in the direction of photogravure. Mr. Herkomer had said that the real process required was one where light did the whole work unaided by any retouching.

Mr. Waterlow, in reply, said that blocks could be, and were, printed by steam-presses. In regard to Husband's lithographic process, he had not mentioned it, as he considered it inferior, though coming in the same category as collotype, which were now very generally in use in France and Germany, and he hoped in a few years would be as general in England. He thought half-tone surface-blocks not very successful, but showed a few examples made by interposing a lined screen. He had occasionally seen first pulls of photogravures requiring no retouching or rouletting whatever.

The Chairman said that he was familiar with most of the processes described, but, had time permitted, would have liked to ask Mr. Waterlow many questions. Had he ever used a battery for his biting-in bath? By this means a very weak solution could be used, and the biting-in acted straight down, with no undercutting. He read a letter from Mr. Sturney containing very beautiful examples of photophane, a kind of collotype for rapid printing; the specimens were much admired. He (the Chairman) said that in collotype there was scope for most artistic efforts by double inking, under or overlaying, etc. Perhaps one of the advantages of Husband's process was, that it was purely mechanical, and produced identical impressions.

OUR ILLUSTRATION.

The charming study in landscape photography with which we illustrate this issue of the Bulletin is from a negative by that enthusiastic amateur photographer of Chicago, Mr. S. W. Burnham. The reproduction gives a very good idea of the beauty of the original, both from an artistic as well as a photographic point of view. The view of the distant rising ground, the winding road, the trees sheltering the homestead from the wind in winter and a cooling shade in summer, the vines trailing their tendrils around the house, all go to make up a scene of quiet beauty only to be found in the country, and especially in northern New England. At some future time we expect to be able to reproduce for our readers another of Mr. Burnham's gems of landscape. Until then, we hope they will have as much enjoyment in looking at our present frontispiece as we have had pleasure in producing it.

A PLEASANT FAREWELL DINNER TO PROFESSOR S. W. BURNHAM, OF CHICAGO.

A number of Mr. Burnham's friends and co-workers in the art science of photography and astronomy gathered at the warerooms of Messrs. Gayton A. Douglass & Co., on Monday evening, 16th instant, ostensibly to witness some electrical developments. At about half-past eight o'clock Mr. Douglass informed the party that the electrician having failed to show up, he hoped Mr. Burnham would forgive the little deception and go with them over to Kinsley's, where a spread of good things awaited them. It took but a few moments to get there, and twenty-three jolly friends sat down to the festive board. Professor George W. Hough, of Dearborn Observatory, graced the head of the table; the Rev. Dr. Arthur Edwards opposite, and the following gentlemen on either side: Dr. H. D. Garrison, G. A. Douglass, F. S. Osborn, Judge Bradwell, H. L. Tolman, J. M. Forbes, R. P. Harley, F. K. Morrill, C. Gentile, W. A. Morse, Dr. C. G. Fuller, Colonel A. F. Stevenson, F. Pebbles, W. C. Dow, Lieutenant Schwatka, the Arctic explorer; E. H. Reed, F. H. Clark, Professor Basten, F. A. Johnson, Dr. C. F. Matteson, George W. Hale, and the guest of the evening, Mr. S. W. Burnham.

After prayer by Rev. Dr. Edwards, a pleasant two hours was spent at the table, and the after-dinner speeches were full of reminiscences of rifle shooting, photography and astronomy. As Mr. Burnham goes to the now world-famed Lick Observatory, the Pacific Coast may well be proud of him, while Chicago loses a noble friend of the sciences.

THE AWARDS OF PRIZES AT MINNEAPOLIS.

Class A—1st. O. P. Scott, Chicago; 2d. J. E. Rosch, St. Louis; 3d. James Landy, Cincinnati.

Class B—1st. S. L. Stein, Milwaukee; 2d. J. M. Appleton, Dayton; 3d. H. McMichael, Buffalo.

Class C—1st. J. M. Appleton; 2d. S. L. Stein; 3d. J. E. Hale.

Class D—1st. J. M. Appleton; 2d. J. E. Hale.

Bronze Medals—Stuber Brothers, A. L. Bowersox, L. C. Overpeck, George Wise, D. Rad. Coover, W. J. D'ole, Lorrin E. Miller, S. M. Adams, Anthon Rhode.

Class E—1st. W. H. Jackson, Denver; 2d. N. F. Curtis, Niagara Falls; 3d. G. E. Mellen, Colorado Springs.

Class F—1st. J. H. Smith; 2d. H. G. Peabody, Boston.

Class G—1st. G. F. Barker, Niagara Falls; 2d. J. A. Brush, Minneapolis.

Class H—1st. Theodore Heinig, Dayton; 2d. T. W. Ingersol, St. Paul.

Class I—1st. H. G. Peabody; 2d. Stuber Brothers.

Class L—1st. The Eastman Dry-plate and Film Company; 2d. J. M. Jordan, New York; 3d. C. F. O'Keefe, Fort Madison.

Hiawatha—James Landy.

Foreign Exhibits—Gold Medal. A. Marn, Frankfurt; Silver Medal. Albert Meyer, Berlin.

B. S. Hays, Cook Ely, George G. Rockwood, *Judges.*

In addition to the above, Mr. George Eastman received an award of special merit as the originator of an important industry. And Messrs. Monfort & Hill received a special diploma for their artistic representation of "Hiawatha." Diplomas of excellence were also given to the following exhibitors: S. H. Edmiston, Gilbert & Bacon, for flash light pictures; C. L. Fowler, J. C. Strauss.

The Anthony Prizes were awarded as follows: $50 for plain enlargements, to J. M. Jordan; $50 for crayon worked enlargements, to George Heyn; $25 for water-colored enlargements, to L. Walkup.

A. P. Scott, J. Landy, *Judges.*

The Air Brush Prizes were awarded as follows: For best water-colors, to A. R. Cottrell, Minneapolis. For best black and white, to N. J. Kelly, Racine, Wis.

H. McMichael, Mr. Doerr, E. Long, *Judges.*

The Acme Burnisher Prize was awarded to President-elect McMichael for best collection of photographs.

The Blitz-pulver Prize went to L. C. Overpeek, of Hamilton, O.

The Eastman Prizes were awarded as follows: Gold badge to Theodore Heinig, Dayton, O. Silver cup to C. F. O'Keefe, Fort Madison, Iowa. Medal to E. M. Jennings, Philadelphia.

G. Cramer's $100 cash prize was won by Coupon No. 370, held by Mr. Holden, of Luverne, Minn.

DEATH OF AN HONORED WOMAN.

As we go to press we receive the following sad announcement: "Died in Waterford on Tuesday, the 17th of July, 1888, Annie Olivia, wife of Hezekiah McMichael, of Buffalo, N. Y., aged 43 years, 2 months and 19 days."

We tender to our bereaved friend our most heartfelt sympathy in his great loss.

The loss of one so near and dear as his good wife is a blow very hard to bear; and her death at such an age of usefulness and fullness of life is keenly felt by all who knew her.

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Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.,
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E. & H. T. ANTHONY & CO., Publishers.

THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

REGULAR MEETING, JUNE 12, 1888.

(*Continued.*)

The *President*—It has been and is very frequently the case in this country and in other countries in the history of photography that a process has been discovered and made generally known to the photographic world, and more or less experimenting is done with it, and it gets to a certain point and gets no further, until a person or persons of a more practical turn of mind turns up, and this person or persons will put the thing on the market and very frequently claim for himself an invention to which he is not really entitled. So far as the paper which is presented here to-night is concerned, the simple fact is that the name aristo is registered as a trademark, and that is the only thing that is really given to us; that is to say, that there is a paper which is put upon the market under that trademark. So far as the aristotype paper is concerned, I think that the Doctor's explanation is very full. There are samples of this paper for distribution among the members, and as we have one or two pieces of apparatus here, I propose, with the consent of the members, to look at these pieces of apparatus and at this process informally, and that we take a sort of a recess. But I should like at this point to inquire if there is any regular business to be brought up for consideration in its proper order, that should be attended to; if there is we will arrange it; if not, we will take a recess to investigate this paper.

A Member—Before you order a recess, would it not be well for you to give the members a formula for this paper?

The *President*—There is a printed formula here that will give the necessary information. I do not think there are enough copies to go around, but for the information of the members I will have a copy pasted up on the bulletin where it can be seen by those who wish to look at it.

Mr. NEWTON—I would like to say a word in this connection on the hypo-gold toning and fixing bath. I notice that it was suggested to put the gold into the hypo; now that will not do; that won't work at all. I would say put the hypo into the gold. You want to mix the two in that way: you have got to put the gold into the hypo; that is a slow process, but it is efficient. A small quantity of nitrate of lead solution should be added to that bath.

The President then read the names of members newly elected: W. Townsend Colbron, Active; Miss Kate Campbell, Subscribing, and Rev. A. H. Hall, Corresponding; and mentioned that any member who desired to obtain any dry plates could do so by application to the person in charge of the rooms or of the Secretary of the society, as a large supply was kept constantly on hand, of all the standard plates.

The President then read a letter from the Eastman Company in regard to a donation of samples of transferrotypes.

Also a letter from the Milton Bradley Company, donating, through Mr. Plympton, a card trimmer.

He also acknowledged the donation of pictures sent by Messrs. Lawrence, Stebbins, Atkinson and Harper, and maps of New York and vicinity from Messrs. Singer, Roumage, McKune, Duffield and Grisdale.

The President then introduced Mr. John J. Acworth, of London, and stated that this gentleman would say a few words on the subject of the Britannia Alpha paper.

Mr. ACWORTH—Well, I don't know that I desire to say anything. I will make a test of the paper now, if that is satisfactory, and you can all see for yourselves. I have the samples here with me, and we will now make the experiment.

The *President* then announced the following meetings: A Lantern Exhibition will take place Friday evening, June 22d, when Interchange slides will be exhibited. Monday evening, June 18th, when Mr. Edward Leaming will open a discussion on Lenses, and on Wednesday evening, June 27th, Mr. C. W. Canfield on "Blue Prints," and ordered recess.

Mr. Acworth made a course of three separate experiments with samples of the paper, the length of time to which each is submitted to the light being different.

Though the experiments were successful, Mr. Acworth explains that owing to the insufficiency of the light of the red lantern, it was impossible for him to fix the proper time during which they were to be subjected to the different solutions. He explains that the color was a little off, but that he believed they would retain their brilliancy when dried.

The meeting then adjourned.

LYNN CAMERA CLUB.

The regular monthly meeting of the Lynn Camera Club was held July 10th, with *President* W. H. Drew in the chair and twelve members present.

It was voted at this meeting to hold an exhibition some time during the Fall, and the committee on entertainments was instructed to make all necessary arrangements in connection with the matter.

Much interest was shown in the new developer, hydroquinone, and comparisons of the results obtained by its use were made.

Although the Lynn Camera Club was only organized last January it already has a membership of twenty-seven, which membership will be increased in the Fall. This indicates a very prosperous society in a city of forty-five thousand inhabitants.

The club has large and well ventilated apartments at 347 Union street, and having plenty of room the dark room was made of ample size and is therefore much used during meetings.

A number of lantern exhibitions have been held, the light used being that obtained from a series incandescent lamp, that is, an incandescent lamp of large size adapted to be run on the same circuit with arc lamps. The light was found very satisfactory indeed, furnishing a powerful illumination, being free from the annoying fluctuations noticeable in an arc lamp and requiring the minimum of attendance in its manipulation. A special double filament lamp was also used, but was found to possess no advantages and some disadvantages over the single filament lamp.

J. W. Gibboney,
Secretary.

ROCHESTER ACADEMY OF SCIENCE—PHOTOGRAPHIC SECTION.

At the regular meeting held July 3d, there was a good attendance of members and several visitors were also present.

Owing to the unavoidable absence of the secretary the regular business of the evening was postponed. James Streeter read a paper upon "dry" pyro-development, which proved very interesting, and created a lively discussion. He illustrated his subject with a drop-shutter view, the negative of which was developed according to his mode of treatment. As he has agreed to give a demonstration of the process at the next meeting, we will defer giving formula, etc., until next report. In the absence of President Croughton Mr. John Niven was elected President *pro tem.*, and showed that he understood his duties.

At the regular meeting July 17th, H. W. Mathews was elected President *pro tem.* James Streeter, who read a paper at the last meeting, describing his method of developing dry plates, gave a demonstration of it. The demonstration proved very interesting and instructive. The following is his formula:

I.

Pyro	12 grains.

II.

Sodium sulphite	2 ounces.
Water	16 "

III.

Sodium carbonate	1 ounce.
Water	16 ounces.

To develop, add the pyro to 2 ounces sodium sulphite solution and add 1 ounce carbonate soda solution to commence with (normal developer contains 2 ounces carbonate solution). If plate is over-exposed, add more water. For under exposed plates, use more of the carbonate solution.

M. B. Punnett reported on his progress with the aniline printing process. A vote of thanks was extended to the publishers of "The Science of Photography" for the gift of a patent binder, and to the publishers of

"The American Journal of Photography" for placing the section on their complimentary list. Subject for next meeting not announced.

MILTON B. PUNNETT,
Secretary.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

Q.—J. L. T. writes: In toning prints I have unconsciously been using the chloride of gold solution minus the solution of acetate of soda. The prints seemed to tone O. K. I used the citrate soda solution first; then washed and placed it in chloride solution. Will prints tone as well without the acetate soda as with, or should it be used to give best results? Kindly answer in the next BULLETIN and oblige yours very sincerely.

A.—It is probable that the citrate of soda solution left in the prints acted similar to the acetate of soda. It is dangerous not to use acetate or bicarbonate of soda in the toning bath, because the gold solution becomes acid and the prints may turn red. If the solution of gold becomes acid it will not tone readily and the gold is wasted.

Q.—M. B. P. writes: *British Journal Almanac*, 1885, page 210, M. Philippe's Aniline Printing Process. Can you, through your columns, give me or tell me where I can obtain further information regarding this formula and the manipulation, etc.?

A.—We do not know the details of this process. Write to J. Traill Taylor, 2 York street, Covent Garden, London. He may help you out.

Q.—T. L. I. writes: A short time ago I found in the *Sun* a test for hypo in silver prints. It was to add to the wash water a small quantity of an alcoholic solution of iodine, which, if the hypo was not all eliminated, would turn the backs of the prints a bluish color, then by continuing the washing until the blue tint disappeared, the hypo would be all washed out. I don't remember of ever seeing any test given for hypo, either in the BULLETIN or elsewhere. Is the test good? If so, will yon please inform me through the BULLETIN more definitely as to the amount of iodine to use.

A.—The test as you give it is not quite correct; the best way is to proceed as follows: Make an alcoholic solution of iodine so weak that it is a pale sherry color. Also make a thin starch paste by adding a pinch of starch to an ounce of water and boiling it. When the starch paste is cold add the iodine to it until it is a decided blue color after thoroughly stirring. This blue iodine-starch is a very delicate test for hypo. Adding it to the wash water it should give a pale-blue color; if it is bleached by the wash water, the latter contains hypo, and the prints should be washed further. If the color remains permanent, the prints are clean.

Q.—F. H. writes: Dear BULLETIN.—In dipping the litmus paper into my silver bath for albumen paper prints it came out a greenish color, with the edge next the dry part a reddish purple. Does the redness of the edge indicate the need of more alkali? I use ammonia and test with blue paper. The paper prints a purple with a reddish cast and after toning and fixing is a bluish purple. Do you prefer a silver bath acid, neutral or alkaline, and what is the surest test for it? I have made a shutter like the one mentioned in the April 28th number, and it works well, my last shot being a flock of over fifty ducks with only two or three slight blurs. I always find something of practical value in each BULLETIN.

A.—The color of the litmus paper is due to the action of the silver nitrate. Use red litmus paper and have the bath neutral or but slightly alkaline to the red paper. We are glad you like the simple shutter proposed, and thank you for the good opinion of our journal. We always try to help and feel that our work is appreciated.

Q.—A. G. W. C. writes: In the BULLETIN February 11, 1888, you gave an article from Sergeant C. E. Von Sothen, on his flash-light pictures. I am very anxious to correspond with the above gentleman. Would you kindly drop me a card with his address, as I am engaged on some flash-light pictures. I hardly get the result I want.

A.—Sergeant C. E. Von Sothen's address is Whitestone, Long Island, N. Y.

Q.—P. C. N. writes: I am engaged as traveling photographer and am using "extra brilliant" sensitive paper for portraits, but find some difficulty in toning. My formula is:

Chloride of gold......	15 grains.
Chloride of Lime......	15 "
Water....	80 ounces.

My object is a black tone, but with this solution I can tone but a few sheets to the desired shade, as it seems to exhaust itself too quickly.

Can you recommend me a better formula for black tones than the above?

A.—Fume the paper strongly for twenty to thirty minutes. You can use the above bath if you make it alkaline with bicarbonate of soda and allow to settle before using. It should give good blue-black tones. You may sensitize albumen paper on a silver bath 50 grains to the ounce, and slightly alkaline with ammonia and get better results. Such paper may be kept a week if you use one of the new preserving cases made by our publishers.

Q.—A. H. F. writes: Will you please inform me why I cannot tone Anthony's albumenized paper to a purple with the following formula, for I obtained a satisfactory tone from the same formula when in England without discoloration of the prints? I have been using Cooper's chloride of gold. Is the gold possibly old? I enclose prints as specimens. Also, what lens would you recommend for long distances? The one I brought out is excellent for architecture, groups and near landscapes, but the pictures are indistinct and minute in views half a mile away. My camera is a ½ plate one:

Toning.

Acetate of soda..........	15 grains.
Water, soft..............	45 ounces.
Chloride of gold.........	15 grains.

Fixing.

Hypo, 2 ounces to 1 pint of water.

A.—The trouble is probably due to not fuming the paper before printing. Fume with strong ammonia for twenty to thirty minutes and let us hear from you again, sending us some prints. A lens for long-distance work has just been invented by Dallmeyer and will soon be on the market; it is just what you need, judging from what you say above.

Views Caught with the Drop Shutter.

We have received the following invitation: "Mr. and Mrs. John E. Douglass invite you to be present at the marriage of their daughter, Carrie Luella, to Clendon Herbert Sheen, Wednesday evening, June 27th, at seven o'clock, Grandin road, East Walnut Hills, Cincinnati, 1888." We tender our best thanks to Mr. and Mrs. Douglass for their kindness, and we wish our good friend, Mr. Sheen, and his wife a long and happy married life.

A Fine Gallery.—Mrs. J. H. Folsom, Danbury, Conn., has just moved into her fine studio in the Bank building. Everything is new, neat and bright and of the latest improvements. Eugene Haines of New York is the operator.

June 25th, a fire broke out from some unknown cause in the photographic gallery of John Wiedermoth, on the second floor of the frame building at 331 Grand street, Brooklyn, and before it was extinguished damage to the extent of several thousands of dollars was sustained. The photographer owns the building. His loss is estimated at $2,000, and is covered by insurance.

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Evening Post Job Print, N. Y.

ANTHONY'S

Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

AUGUST 11, 1888. Vol. XIX.—No. 15.

THE PICTURES AT MINNEAPOLIS.

Although the display of pictures at the Minneapolis Convention was not as large as that at Chicago, yet the quality of the work shown was fully up to previous years, and in some cases even surpassed the productions seen in former exhibitions. This latter was notably true of the genre pictures, some of which were exceedingly fine.

The hall where the pictures hung was admirably suited to the purpose of the exhibition, it being built specially for a picture gallery. Under the special supervision of Vice-President Guerin the pictures were well arranged and the exhibits all appeared to a good advantage.

On entering the hall the first display was work done by the air brush. This included enlargements upon bromide paper and from the solar camera, that were worked up in ink, pastel and water color by the air brush process. There is no doubt that most beautiful results are obtained by this method, and the skill displayed in the use of the process is increasing from year to year. All the pictures shown were very fine indeed, the water colors in many cases being very beautiful.

The next exhibit we came to was that of Ernest Krueger, of Ann Arbor, Mich. In this we noted a composition picture entitled "Cast up by the Sea," a female figure prostrate upon a pebble beach. The picture was 14 x 17 and very fairly done; but, unfortunately, bodies cast up by the sea do not look so pretty as the one seen in this composition. In the same exhibit was a picture illustrating "Hiawatha," but of this we shall speak elsewhere. Two fine pictures were also to be seen here, one an uncommonly good portrait of a pointer dog entitled "Our Tip," and another called "Chums," showing a child and dog. These were finely done and much admired.

Stuber Bros., of Louisville, Ky., had a number of fine portraits, but the most interesting pictures shown by them were studies in cabinet groups: darky newsboys, shoeblacks, etc., all very well done and showing some fine photographic skill in the pictures produced.

H. Carlin, of St. Paul, showed a number of worked enlargements and pastel portraits that were very good work. One picture called "The Sick Monkey" was quite interesting. The view shows a cage containing three monkeys. At the back of the cage is seen a healthy-looking specimen of the species sitting on a rail with an orange between his hind feet, while he is extracting the juice from another orange with every evidence of personal satisfaction, and an utter disregard to all other individuals. In the front of the cage is seen an older monkey with a young specimen hugged to the breast, the faces of both of these being filled with all the evidences of sympathy on the one side and misery on the other. The picture was quite a study and speaks well for the artist who made it.

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Coover Bros., Iowa City, had an exhibit that embraced large heads, children's pictures, interiors and transparencies. The large heads were very good, the children's pictures excellent; while the interiors and transparencies showed some excellent photographic work, the transparencies being in some cases very clear and brilliant.

L. C. Overpeck, Hamilton, O., had a number of large portraits that were very good; but the best and most interesting part of this exhibit were the large flash-light pictures of children; these were excellent and well worth seeing.

Ingersoll, of St. Paul, showed a number of fine pictures. An instantaneous view of some boys swimming with a log reminded us of some of the gems of Frank Sutcliffe, of Whitby, England. It was excellent. We also noted some fine architectural work in this exhibit, clean, sharp and thoroughly well done all through.

At this point in our progress through the exhibition we noted a very interesting exhibit by E. Long, of Quincy, Ill. This was a pair of small pictures, one a daguerreotype and the other an electrotype of the daguerreotype made thirty-six years ago. It was almost impossible to tell the difference between the electrotype and the daguerreotype, the work was so well done. When we think of the delicacy of the daguerreotype image, it seems almost incredible that an electrotype of it could be made; yet here was the feat accomplished beyond a doubt.

Rusmussen, of Rock Island, Ill., showed a number of fine heads that were evidences of much photographic skill and artistic taste in lighting.

W. J. D'ole, of Kansas City, had an exhibit of some very good portraits; but we cannot say that we like the red tone of the prints; we are very much afraid that they will fade. At this exhibit were some excellent genre pictures. One, "A Proposition," was a lady reading a letter, the story being told in every line of the picture with excellent effect. Another was "Meditation," and was equally effective. A third was "Prayer," and a fourth was "Young America," a rakish-looking boy smoking a cigarette.

Geo. W. Wise had a handsome frame of cabinets that were thoroughly well done, especially the groups, which were notable for good posing and lighting.

E. H. Newcombe, Huron, Dak., had a modest exhibit of six cabinets that were excellent work. We are sorry that the number was not larger, for the posing, lighting and finish of the pictures pleased us much.

Anton Rhode, of Chicago, had a good display of cabinet pictures; but the most interesting part of this exhibit was a number of compositions. One was a young lover giving a letter to a dove and was entitled "Postillion D'Amour," the companion was a lady receiving the billet d'amour from the dove. Another picture called "Returning from Donnybrook Fair" showed a young Irishman evidently the worse for his drinking. While yet another showed a priest listening with a delighted face to the words of a young damsel who is whispering in his ear, and the picture bore the title: "In the Corner of a Garden." All these were well done and represented the ideas they were intended to convey with much truthfulness to nature.

W. H. Jackson, of Denver, Colo., had one of his usual fine exhibits. We have yet to see a picture from this gentleman that is lacking in fine appreciation of nature and a beauty of finish that he has made his own. Among the many grand views (all large) that were displayed in this exhibit we noted Glacier Point and South Dome in the Yellowstone Valley; a view of the interior of the San Gabriel Mission, a picture very difficult to obtain owing to the care of the priests in charge to prevent outsiders getting views. And El Capitan in the Yosemite Valley, with fleecy clouds around the summit, giving a beauty to the view we have never seen before.

Stein, of Milwaukee, had an unusually fine exhibit. The large life-size heads were very beautifully done, fine lighting and posing being their chief characteristics. The smaller pictures and cabinets were also very good, and showed the same care in their production as the larger pictures. Some composition pictures in this exhibit were excellent specimens of this kind of work. "The Dancing Girl" was a gem, the artistic effects of light and shade, the lifelike and thoroughly effective idea of motion in the figure being capitally caught in the picture. Another good one was entitled "Here's Looking at You," an old man drinking, and with a face beaming with good humor. Yet another beauty was "Nubian Fruit Seller," an illustration of an Oriental type and a very artistic effort.

Rosch, of St. Louis, showed considerable improvement in the pictures he exhibited when compared with those seen at Chicago. The portrait work was very fine indeed; good posing, excellent modeling, wonderful detail in the fabrics, and a fine black tone on the finished prints that made one think of some rich engraving. The beauty of detail in the fabrics was best seen in the lace dress of a girl with a mask, in which picture the work of the artist was seen to best advantage, every thread appearing with wonderful minuteness and exhibiting the great skill shown in its fabrication.

J. Heggessey, of Alliance, O., exhibited some good work in cabinets, and the large pictures of children were very good. The easy pose, the lighting and the generally attractive appearance of the pictures being notable features.

Strauss, of St. Louis, had a number of fine large portraits that were fully up to his usual good work. In the same exhibit were a number of genre pictures that were well done. "Meditation" and "Sweetness" were both charming studies and thoroughly well executed. "The Light of Progress," two boys smoking cigarettes, one, evidently a tyro at the weed, getting a light from the other, gave an uncommonly interesting photographic sketch. A companion picture, "The Progress of Pallor," shows the result of indulging in smoking by tyro of the first picture, the face showing every evidence of inward misery. "A la nude" a picture of a fat little child upon a pedestal was also well done and very pretty.

George Heyn, of Omaha, had one of the best exhibits of worked enlargements upon bromide paper to be seen in the exhibition. The gradation of light and shade was excellent and the clearness of the white parts of the pictures very remarkable. The negatives from which the pictures were made were evidently well executed and the artistic lighting and posing spoke well for the skill used in their production. It is very important, if good results are wished for in bromide enlargements, that the negatives should be made with this object in view, and none but a clear, sharp and well-timed one be used, to secure the best results. If poorer negatives are used, then much work is needed in touching the enlargement. These pictures of Mr. Heyn were made upon bromide paper manufactured by our publishers, and they most certainly left nothing to be desired as to good qualities of all kinds.

Our space in this issue of the BULLETIN is now exhausted, and we must defer the rest of our review until the next issue.

EDITORIAL NOTES.

THE English Photographic Convention met at Birmingham, July 23d to 28th. The "Programme of Excursions and Local Arrangements" is a model of completeness. It contains maps of the various points of interest for the members going on excursions and the name of the various committees in charge of the receptions, entertainments, exhibition and excursions, together with the rules governing the members attending. It appears to us it might serve as a type for similar methods for the Photographers' Association of America. If the work of the latter body was as well arranged as that of our English friends, there would be much time saved and very much more good accomplished at our annual gatherings.

WE hear that there is a movement on foot to have a grand congress of American Amateur Photographers to be held in Washington. This is an excellent idea and we hope it will be carried out at an early date. The exhibition is to be a very large one, and after being shown in Washington it is to be displayed in various other cities that will make arrangements for its accommodation.

ON our return from Minneapolis we visited Mr. Gayton A. Douglass in Chicago. We had a very pleasant chat with this enthusiastic photographic merchant and were very much pleased to see his admirable dark room. It is fitted with every appliance to facilitate the development of plates, and the various devices for the comfort of those using it were both ingenious and useful. Those of our readers who reside in or near Chicago should visit Mr. Douglass, and we promise them a hearty reception and a thorough interest in their work.

MR. ANDREW PRINGLE recommends the use of a solution saturated with alum and iron sulphate, and containing to each pint half an ounce of hydrochloric acid and "a good dose" of citric acid, for clearing gelatino-bromide lantern slides. He says that this solution overcomes all the objections hitherto raised against the use of dry plates for transparencies for projection. We have often recommended a similar solution for the same purpose, except that we omitted the iron sulphate, and we strongly recommend those of our readers who are doing this kind of work to try the above formula.

PROFESSOR H. A. ROWLAND, of the Johns Hopkins University, is at work upon a new photographic map of the solar spectrum, extending from the ultra-violet and reaching to B, and wave length, 6,950. New concave gratings, having a diameter of six inches and twenty-one and a half feet radius, have been ruled with ten and twenty thousand lines to the inch, and give a definition hitherto unattained. Professor Rowland is very enthusiastic in this work, and deserves the admiration of all earnest photographic workers.

MR. G. PACH, the well-known photographer of Broadway, New York, sends us a cabinet picture of his two little boys, that is very characteristic and interesting. The oldest of the two has a gun in his hand, which he is in the act of cocking, ready to fire, his little brother standing behind him, thoroughly interested in the operation, holds his hands to his ears to deafen the coming report. The picture is full of life and detail, and Mr. Pach tells us it was made on one of the latest emulsions upon a Stanley plate. It is certainly a capital picture and thoroughly well caught.

WE note that the "Photo Club de Paris" is being organized for the study of photography in its application to art, science and industry. It is a club of amateurs, and those interested should write M. Gabriel Rougier, editor of *l' Amateur Photographe*, 8 place de l'Odeon, Paris. Some of our French readers will no doubt find this a useful society.

THE application of photography to the study of meteorology is beginning to bear good fruit. The Royal Meteorological Society of London, some time ago, sent a number of circulars to various photographic societies in Europe and America asking for phototographs of lightning. These pictures have been studied with the result that no less than six varieties of lightning have been made out. 1. Stream lightning—a plain, broad, rather smooth streak of light. 2. Sinous lightning. 3. Ramified lightning—part of the flash branching like the root of a tree. 4. Meandering lightning—having no definite course. 5. Beaded lightning—a number of beads on a streak of light. 6. Ribbon lightning. Of the first of these only one or two specimens were obtained. The second is quite common. The others are not so often seen, although the last was shown is one-sixth of the photographs examined. It is curious that none of the photographs show the zig-zag so often seen in pictures. The society is still anxious to receive other photographs of lightning.

J. C. Early, of Haightstown, N. J., sends us a couple of photographs that are very well done. One of these is a flash-light interior that is a little undertimed in the shadows, probably due to using the flash in too small quality; only a little more is needed. The landscape is very good; the detail, in both foreground and distance, is very good, and we think his management of the developer (hydroquinone formula from Bulletin) is excellent. The printing, toning and mounting of both pictures is also good.

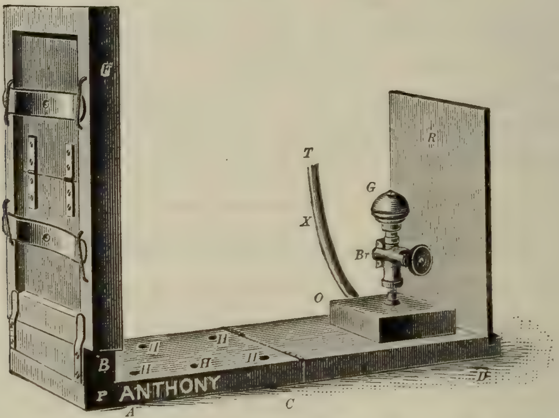
EXPOSING APPARATUS FOR SLOW BROMIDE PAPER.

By J. J. Acworth, F.I.C., F.C.S., *London.*

The fact that, as far as I know, no such kind of apparatus for making regular and exact exposures by means of artificial light exists, is the reason that I now give a description of such an one designed by myself for the purpose. And I only hope that some of my American friends may find it of as great value for general and experimental use as I have done for some time past. I may state at the outset that the apparatus is only useful for contact printing and not for enlarging. As a rule, exposures are given in such vague terms that they mean very little, and consequently are very little, for what is intended—for instance, I have heard it said, "That paper will require thirty seconds to gaslight," which practically means nothing—whilst exposures given in terms of daylight might be considered absolutely worthless.

Now I think it very desirable that we should, as much as possible, have a standard exposure to work with. I know there are difficulties in the way; still, I should like to suggest a standard distance from some convenient illuminant, say a fish-tail gas-burner, which I always use for my own work. The distance might be, say twelve inches, and the burner one burning five feet of gas per hour. If this were taken as a rough, though I think a practical stand, we could then be able to mark on our negatives the exposure to give them in terms of normal when using papers of different rapidities. Some of my negatives I have already marked thus, in terms of the standard I have myself adopted, so that whenever I want a print I am sure of not making a failure—a narrow slip of paper, eighth or quarter of an inch along one edge, being quite sufficient for the purpose of marking exposures too fine for any paper used. N. B. The apparatus is quite simple and the following diagram represents my own:

A C D is a piece of mahogany about ⅞ inches thick, hinged in the needle so as to fold up if necessary. *B* is a block with spring clips at top to grip the printing frame *F*. The block *B* is kept in proper position by means of a couple of pins *P*, passing into holes in the base board *A C D*. *H H H H H* are holes in the base board *A C D*, to receive the frame carrier *B* at different distances from gas flames, namely at 12, 10, 8½ and 6 inches respectively. The exposures varying in the ratio of 1, ¾, ½ and ¼, so that, supposing we took 12 inches as the normal distance and that a gelatine negative of ordinary density required 20 seconds to this size gas flame, then, if we wished to give it a shorter exposure, say one-half, we should simply have to move the frame carrier *B* to the 8½ inch distance from burner and expose for 10 seconds only. The nearer distance becomes more especially valuable, of course, when working with dense negative, whilst a greater distance than 12 inches may be sometimes necessary when working with thin negatives. *G* is the gas flame and *Br.* is the burner, which I arrange to disconnect at *O* for sake of portability. The burner is of course supplied with a bye-pass so as to turn the light up and down instantly. *X* is connecting tubing which follows away at *T.* *R* is reflecting screen of thick white card board which increases the illumination by about 20 per cent., and can be used as required. As can be seen the apparatus is portable and can be packed in small compass and is always ready. In conclusion, I only hope that should others use an apparatus similar to the one I have been describing, they will do so with as much satisfaction as I have done.



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MUCH ADO ABOUT A DAGUERRECTYPE.

BY P. C. DUCHOCHOIS.

When crossing Broadway—not in New York, but another town in its vicinity, fifty or hundred miles away—a gentleman, I do not remember having seen before, called me by name. He was a photographer, and, of course, between brothers in art the acquaintance is made as quick as a twinkle. He wanted to know how to clean a daguerreotype, "an old curiosity," as he said. And the fact is, that to clean daguerreotypes is little known at present, except by those who fortunately or unfortunately—that depends upon how you look at it, philosophically, for they are old men now—practiced the wonderful process discovered by Daguerre. Well ! I slowly climbed, blowing and melting into water, the five ! flights leading to his gallery—98 degrees in the shade—and there he showed to me a daguerreotype by Brady, a little stained, for the idea had not, so far, struck the owner of having it cleaned with soap—soap and a scrubbing brush, but otherwise perfect in every respect. It has not faded, and will not, as will all the silver prints made nowadays, most of them, even before those they represent are gone, as says the poet, beyond, etc. I cleaned the daguerreotype in the manner I will describe for the readers of the Bulletin. When it was done, my young friend was delighted. "How beautiful!" says he. "Now I can take a fine clear copy of it, charge for the cleaning (!) and so forth. By the by, M. D., since you are ever so obliging let me ferrotype you (*sic*). Take this Havana. Light it. Put your hat on (it is of the latest style, very artistic and melon form, as usual). Sit there; a little more profile, if you please. Look at that beautiful picture of a beautiful girl. How sweet she is! and dresses so well! what an elegant bustle! you see it yet, five minutes after she has turned the corner. She is the belle of the town, you bet! and my sweetheart! Don't laugh so much, M. D. (he thought I was trying an expression). I use no head rest. Don't look so serious. Now, don't move. Pleasant expression. I expose as quick as lightning!" And he did! The result was the poorest ferrotype of all the ferrotypes ever taken in the new and old world or elsewhere.

"Let me try again, M. D. I want your picture in my show case (!)"

"Indeed, M. X., you are too kind!" I was flattered, and I went on to explain that the silver bath was likely good enough, although a little strong, the collodion too thick, the developer very oxidized, not of the right kind and the exposure too short. So he diluted the collodion and I made a Spiller's developer. Now sit there, M. D."

"But," I observed, "we will not have a good picture unless the light——"

"Well, I declare! my skylight is the largest in town, you bet! and there is a tremendous flow of light all over the room."

"Too much, M. X., entirely too much. In photography, you know, strong light is synonymous with exaggerated shadows, white and black negatives, solarization of the lights and so forth. When taking gelatine negatives and especially ferrotypes the light must be softened by screens. Now, you should not place me so near the side light, but far from it; there, for example, for——"

"But, my dear sir, I shall have to expose longer," says he, smiling in a certain queer way.

"True, M. X. But, look! I am an old-fashioned photo and I care not whether I expose as quick as a twinkle or as a dozen of them. What I want is to produce good, round pictures, full of half-tints in the lights and shadows, and plenty of details in the draperies, which is not as easily done as it seems, even by arranging the light, as I have, and placing a transparent white screen opposite the lighted part of the model and another over the head, as I would if you had them; for you know, M. X., the development has also something to do in the matter, and ——" He looked at me with his queer smile, and that interrupted me at once, for I understood it now. Then he timed the plate and I developed it.

"You see, M. X., this ferrotype might do, although not as good as it should be. Decidedly the silver bath is too strong, and wants boiling and sunning, as shown by the whites, which are greyish. The collodion seems too bromized for ferrotypes. I think I can give you a very good formula, and if ——"

"Well! well! I declare! Good day, M. D.," and he smiled again. It makes me mad. "*Vox clamantis in deserto!*" I shouted. Did he understand? Anyhow, I took the next train for New York.

Jurant, mais un peu tard qu'on ne m'y prendrait plus! But I must not forget to explain

How to Clean Daguerreotypes.

It is as follows: Take hold of the daguerreotype with pincers by one corner and, keeping the plate level, cover it with a solution of potassium cyanide, 1.25, and if the picture be much stained, heat it moderately with an alcohol lamp for fifteen or twenty seconds, when the solution is thrown off and the plate rinsed. This done, flow the plate with clear water, heat it as before, and holding it then almost vertically, dry it; in commencing to heat it at one of the upper corners and driving the water by blowing upon it to the opposite one.

The whole operation should be quickly done and the plate not too strongly heated, especially when covered with cyanide, otherwise the image might be obliterated. The daguerreotypes may be dusted with a fine camel brush, but not touched with the fingers nor rubbed with any hard material whatever. They are very easily scratched.

PHOTOGRAPHIC OBJECTIVES—FACTS AND FALLACIES REGARDING THEM.

BY EDWARD BAUSCH.

[Read before the Minneapolis Convention.]

THE literature on photographic optics is exceedingly meager, and that which is open for study is distributed mainly in the form of papers and articles written in photographic journals. The terms "depth of focus," "distortion," "chromatic and spherical aberrations," "visual and chemical focu," are used rather promiscuously, and I fear not always understandingly.

It is not my purpose to give you a treatise on optics pertaining to photographic lenses, but to mention those terms and give explanation of them, which meet one in pursuit of photography, and draw attention to some things which, from my experience and a varied correspondence, I am led to believe are not fully understood by all. The diversity of qualities pertaining to lenses for photographic purposes is apt to be confounding, unless a person has the benefit of extended experience or study on the subject, and there is no question that the assumption of knowledge where it did not exist or relying on statements which were not correct, have led to many errors of judgment which in turn have been the cause of disappointments, prejudices and loss. I therefore think that any statement of facts which are incontrovertible because they are natural laws, will not only be fruitful of a better knowledge, but may in time lead to some unity in the mode of examining and testing objectives, for I venture to say that there is a necessity for this, inasmuch as different persons follow different plans giving various results, and few of them accomplish the completed result.

It may be best to say at the outset what the qualities are which are valuable in in a first-class photographic objective, and which, with many others, are the problems for the optician to solve. They are as follows: Exact coincidence of visual and chemical foci; a formula involving such glass and curves which will give the utmost freedom from spherical and chromatic aberrations; such a relation of glass and curves which will avoid internal reflections and consequent "flare" or "ghost;" length of focus; diameter of lenses; absolute homogenuity of glass, or freedom from striæ or veins; grinding or polishing the various surfaces so that they shall be strictly spherical; absolute centering of lenses before and after mounting.

I cannot think that I can better show the importance of these various factors than by leading you through the process of completing a lens, omitting the minutiæ of work, and thus also showing you the difficulties which beset the path of the optician in his endeavor to reach the result.

We will assume that he desires to make a medium-size objective of the form which is principally used to-day—a system of two symmetrical combinations, and that he has laid out the formula on which he intends to construct it, in advance. He has in his possession four plates or disks of rough and unsightly glass, two of which are crown and two flint, which are to be to him the cause of disheartening failure or gratifying success. If he has any experience at all he will use no other than such which is warranted by the glass manufacturer, because then he will find considerable difficulty in obtaining perfect glass. The glass comes from the manufacturer either guaranteed or not; in the latter he assumes no responsibility, while in the former, he does as far as the refractive index and most glaring faults are concerned. If they are of guaranteed form, the disks have faces ground and polished on the edges on opposite sides, by means of which the maker has carefully tested the glass and by which means the optician may do the same. I would say here, in parenthesis, that none of this glass is produced in this country, and none of the glass manufacturers with whom we have yet come in contact have shown any inclination to undertake to make it. We hope and feel confident that the time will come when it will be made within our borders, and when so, with the natural facilities at our disposal, we feel certain that we shall obtain a higher and more satisfactory result than exists to-day. The cost of the glass is now a very important factor in the price of the lens. The glass itself must, of course, conform to the formula, and often the formula must conform to such glass as it is possible to obtain.

Any variety of crown or flint may be obtained, but it has been found that the light flints and crowns give the most satisfactory results. Flints are usually the outer lens of double combinations, and when heavy are exceedingly soft and subject to oxidation.

The optician now begins to abraid the glasses, giving them approximately the form he wishes them to have, and then begins the process of grinding and polishing. Although this is done on the same general principle, the details vary with different opticians, and although the same result may be and is accomplished in different manners, it is safe to say that if one were to follow the plan of another he would fail. There is a peculiar touch or feeling in doing this work which it takes years of practice to acquire, and even then I find that a person must be adapted to it. One might give the method of procedure down to the minutest detail, and this has often been done, and for all that a person might follow it any number of times and still fail.

One thing however is true, that few persons have any conception of the utmost exactness which is required in this work. This remark, of course, applies mainly to an objective which is to be of the highest standard, and which to a certain extent varies with different opticians according to their skill, and not to such productions which may be called commercial, for the reason that the pecuniary return and not excellence is the paramount in consideration. A certain amount of exactness must even be observed in the cheapest forms, but they are not subjected to critical tests and many faults which are not apparent to the purchaser are allowed to pass which is not the case in the highest grade where the best is none too good, and the result is, of course, that they are inferior, varying and unreliable, and while occasionally one may find an excellent lens among them, no reliance can be placed on them. It has been computed that an error or variation from the spherical surfaces, for instance, so infinitesimally small that there are no mechanical means for determining it, say of a $\frac{1}{500000}$ of an inch will have a noticeable and sometimes disastrous effect in the formation of an image. We all know, from the fact that we have read it often, of the utmost exactness with which a telescope objective must be made, and the claim is generally made that because the image from the objective is magnified by the eye-piece, a greater perfection is required in the telescope objective. I have found, however, that any lack of perfection is noticeable by an eye-piece is as pronounced in the camera, and I therefore claim and make this emphatic, that a first-class photographic objective requires as much perfection as that in the telescope or microscope, and no work spent upon it to accomplish this result is lost.

To return to our objective, we will suppose that all the surfaces have been ground and polished? This in practice means considerable. The difficulty of working the surface increases out of all proportion with the increase in size, as well as the danger of scratching. It is an ordinary event to scratch a surface during the process of grinding and polishing, and nothing uncommon to do so in the last stage of the latter when the entire work must be repeated. No matter how good a surface may otherwise be a scratch is inadmissable; not that it does any particular harm, but an optician who takes pride in his work cannot bear it, and the customer who is to pay for it will not accept it.

After polishing, the lenses are put into a lathe one by one, and centered, that is, the optical axis is found which we know we have when on revolution of the spindle the two images which the surfaces give are stationary. The edges are now ground down to the diameter of the cell in the mounting. The next step is cementing. This is a delicate process, for although in each step of the work heat has been used, a much higher degree is required, and the danger of cracking the lens is increased. It is no ordinary occurrence to lose lenses in this work or for that matter, at any point of the progress. Great care must here be observed to prevent the cement turning yellow and thus disturb the transparency of the lense and thereby cause loss of light. The lenses are next temporarily fixed in the mounting and are ready to be examined in the camera. Now comes the moment of suspense. Focusing on an object, and for this purpose I consider a large flat screen, covered with printed matter containing various sizes of letters, or a large map hung against a perpendicular wall the best, the first thing which comes to our notice is the focal length of the objective. It may be one-half of that which was figured upon, or twice as long. However, if not correct, we make note of how much it varies and proceed to examine the image.

This may be sharp and brilliant in the center and gradually becoming more indistinct as it nears the edge, and may remain indistinct near the edges under any amount of focusing, or it may have the same fading out of the image towards the edge when the central portion is sharp, but this may be brought out clear by changing of focus; or the image may be such that it cannot be sharply focused at any point. There is yet one possibility that the image may be quite sharply defined over the entire screen; this, of course, is the most favorable condition. After making note of whatever the appearance may be, we proceed to determine the coincidence of visual and chemical foci. As is well known, there are, photographically speaking, two sets of light rays emitted by every object. Those which form the image on the screen and which are most perceptible, or the visual ones are made up by the red, yellow and orange colors of the spectrum, whereas those which make the photographed image or the chemical rays, are formed by blue, green and indigo, which are the least discernible, and it is a problem of some difficulty to bring both sets to form an image in one plane. To determine this, we proceed to make an exposure on a plate. Before doing this, however, we must be assured of three things: first, that the ground glass is flat; second, that the plate which we intend to use is flat; third, that the plate, when exposed, will be in exactly the same plane as the ground glass. I lay great stress upon these points, because on them depends a reliable result, and then, because with many plates and cameras these conditions are not fulfilled. If you will go through a package of plates you will find some almost perfectly flat, others convex, others concave, the deviation being fully as much as $\frac{1}{16}$ inch, and I suppose in large plates even more.

I do not mention this in the way of finding fault with the plate makers, because, ordinarily and particularly, when stops are used it is of little moment, and because it would be almost impossible to furnish selected flat plates at the present prices.

The Eastman Roll Holders I have found well adapted because the film passes over a fixed and flat back which remains constant in its relation to the ground glass. If the ground-glass is flat, then flat plates should be selected, and if the ground-glass be concave, then plates corresponding to it should be used. I believe that as a rule, where care is observed, slightly concave ground-glass or plates are used because they come in this way, and this form favors the lens. The only thing, however, which should be insisted upon, and which I am sorry to say is not always the case, is that the film side of the plates should be exactly in the plane of the ground-glass when it replaces it.

To determine this, the following plan, which I think is used by manufacturers of cameras, is effective. Take a straight-edge and allow it to rest upon the face of the frame of the ground-glass which rests against the back of the camera.

Cut a small wedge of wood and insert this between the straight-edge and ground-glass as far as it will go, and mark the edge in line with the straight-edge, when it fills up the space. Now take a plate which is suited to the plate-holder, and which is known to be flat, and place it in this, and by the use of the straight-edge and wedge, proceed as before with the ground-glass. It is unnecessary to say that the marks should agree exactly, and if not, should be made to do so. These precautions are alike necessary for the optician and photographer, whether for the purpose of determining the quality of a lens or for making comparisons between several lenses, and it is a test which every camera ought to undergo. After the plate has been exposed and developed we may find that although we have a sharply defined image on the ground-glass, the one on the plate is very indistinct, which shows that the chemical foci may be sharper or longer than the visual.

To determine the extent of variation a number of exposures must be made, placing the ground-glass within or beyond the visual focus until as sharp an image is obtained in the negative as on the ground-glass. We now have all the principal data to enable us to proceed with the correction of the lens. First is the focal length, next the spherical abberration, then the amount of distortion, and last, but, for the present, most important, the difference between visual and chemical focus.

(*Tò be continued.*)

DRY PLATES.

BY G. CRAMER.

[Read before the Minneapolis Convention.]

SINCE the introduction of the dry plate into practical use, about eight years ago, the process has been brought to such a state of perfection that all its branches are now almost universally understood.

Plates are now made which combine a very high degree of speed or sensitiveness, with all other good qualities.

Pictures are now produced with the minimum of exposure, and with a higher grade of perfection than was possible with the collodion-and-silver bath, as can easily be verified by the specimens of beautiful work shown at our photographic conventions.

The photographer of to-day can hardly imagine the troubles of his brethren in the olden time; for instance, in making a copy, sometimes requiring ten or twenty minutes exposure, or taking views outside of a studio, or making pictures of restless children, family groups, etc.

But even if the process has been reduced to simplicity itself, there is always room for the true artist to show his superior skill and taste, and he will produce a picture which will bear criticism, where another one, not so gifted, will, with the same materials, make but a mediocre piece of work.

It is admitted that the more sensitive the plates the more they must be guarded against injury by improper light, or too much light while developing, and that a very rapid plate does not permit any careless manipulation.

Forcing the development with solutions strong in alkali is detrimental to the beauty of the negative, and does not accomplish its intended purpose of making up for insufficient exposure. Mild treatment is always to be preferred, and whenever the clearness of a good plate is affected, it is a proof that the plate has been either light-struck, or that the developer is too warm, or too strong in alkali.

Strength and temperature of the developer being of the greatest importance, it is evident that the developer should be used cold and more diluted in summer; while in winter or cold weather, it can be used stronger and warmer, on account of the liquid cooling very rapidly in the cold dishes and cold atmosphere.

The alkali now mostly employed is the carbonate of sodium, which, if judiciously used with pyro and sulphite of sodium, has thus been unexcelled as a developer for dry plates.

The newly recommended hydroquinone has not yet been proven to have any advantage over this simple developer, either in rapidity or fine printing quality.

That the amount of pyro used regulates the intensity, and that the color of the negative can be regulated at will, by the use of more or less sulphite of sodium, are facts now so well known as to need no further explanation.

Strengthening of negatives should be avoided as much as possible by carrying the development far enough, as it is easier to reduce than to intensify a negative.

For reducing intensity, the combination of red prussiate of potassium and hyposulphite of sodium has no superior. In order to insure durability of negative and to avoid stains, the necessity of thorough fixing and the frequent change of fixing bath is urged by all authorities.

The great annoyance in the past, of frilling and softening of films, which caused the loss of many negatives, and especially so in hot climates, can be avoided by using cold developer and a fixing bath containing an equal amount of alum and hypo; as after passing through this bath the film is perfectly hardened, and the negative can subsequently be washed even in warm water.

Different systems of marking the plates with numbers indicating their sensitiveness are used; but owing to the fact that there is no unchangeable standard of light by which sensitiveness can be measured accurately, and that under certain conditions the plates gain considerable in speed with age, no positive reliance can be placed in these numbers; and the only safe guide to ascertain the speed of a plate exactly, is actual trial.

In the short time of its existence, the dry plate has revolutionized the art of photography, and made possible that which in the wet plate days was impossible.

Keeping abreast with the spirit of our country, the dry plate will be found prepared to satisfy the demands of science and the arts, so far as human brain and ingenuity can do it.

SCIENTIFIC DEVELOPMENT OF THE PHOTOGRAPHIC IMAGE.

By John Carbutt, *Philadelphia.*

[Read before the Minneapolis Convention.]

At the solicitation of our President for a practical paper to be read at the Convention, I have selected the subject, "Development of the Photographic Image." I have been impressed when examining the work of different photographers that much of it would have been greatly improved had the plate had treatment in developing suited to the subject and lighting. There are photographers who make the study of the developing of a plate of as much importance as the lighting of the subject, and it is by such that we find produced the highest results in photography.

You may take the most perfect plate sent out by the dry plate maker and religiously follow his formula for development, but unless your own judgment is largely made use of in so preparing the developer as to suit the subject, the most mediocre result may be produced. Strength of alkaline solution and temperature at time of using are largely the controlling factors to a successfully developed negative. The photographer may arrange the most artistic pose and lighting, and produce but a poor result photographically by unskillful use of his developer, and he will most likely blame the plate maker for the poor quality of his negative.

The fixed alkalies, potassium carbonate and soda carbonate, in combination with soda sulphite, are the alkalies most in use by American photographers in forming a pyro developer. Of the two alkalies, the soda carbonate has my preference especially in summer time. By compounding a stock alkaline solution in the following manner, it becomes a matter of extreme simplicity to form a developer suited to the lighting and subject in hand.

Take of

Soda sulphite crystal	2 parts.
" carbonate crystal	2 "
Water (warm)	10 "

This when cooled to a temperature from 60 to 65 degrees F. will be found to test 20 degrees with Baume's hydrometer. By dilution with water to one of the three following strengths a developer can be formed more suitable to the subject than by using one strength of alkali, as is commonly done.

1 part stock to 5 parts water weighs	3½ degrees B.
1 " " 8 " "	2 "
1 " " 10 " "	1½ "

The 1 to 10 may be considered a weak solution, the 1 to 5 strong and the 1 to 8 medium. To any one of these may be added pyro dry or in solution, in the proportion of from 1 to 3 grains to the ounce. It will be well to bear in mind that the slower and more vigorous working plate requires a developer stronger in alkali and weaker in pyro, and the reverse for a highly sensitive plate. For a subject in light colored drapery, I recommend the 1 to 10 alkali solution with from 1½ grains of dry pyro or ½ dram of 1 in 16 pyro solution and 1 or 2 drops 10 per cent. solution of bromide of soda or potassium, or bromide of ammonia. For general run of subject having dark or mixed colors, the 1 to 8 alkali with from 1½ to 2½ grains of pyro to the ounce forms a generally useful developer. For dark colors in drapery and complexion, the 1 to 5 alkali will be most serviceable.

In conclusion, I would say that a full exposure, a weak alkali and a little bromide to the pyro are conducive to well-modulated negatives, whereas a strong alkaline solution gives a flat and gray negative lacking good printing qualities.

A NEW FORM OF SENSITOMETER.

BY W. F. DONKIN.

[Read before Camera Club Conference.]

The principle of the sensitometer I am about to describe is that of the pinhole camera. The idea of applying this principle to sensitometry is due to Mr. A. Vernon-Harcourt, who suggested it to me last April. I then made a few rough experiments, which seemed promising, and have lately continued them more carefully; and, though they are by no means complete, I have arrived at results which prove the applicability of the principle.

If we take a camera with a pinhole instead of a lens, and place a lighted candle in front of it in an otherwise dark room, so that the image of the candle-flame falls on the sensitive plate, we shall obtain a visible image on development of greater or less intensity, the intensity varying with several conditions. Thus, it is obvious that the intensity of the image will be increased (1) by a longer time of exposure; (2) by a brighter light; (3) by a larger pinhole; (4) by a shorter distance between the pinhole and the plate; (5) by variations in the development; and lastly, by greater sensitiveness of the plate. It is plain, also, that we may take values for the first five conditions such that, with a plate of a certain sensitiveness, an image is obtained only just strong enough to be visible. If, now, we make another pinhole a very little smaller, keeping all the other conditions constant, we shall obtain no visible image at all. A more sensitive plate, however, would give a visible image with the smaller pinhole. Suppose, then, we make a number of pinholes—say twenty-five—in the front of the camera, of graduated sizes, a series of images of the single candle-flame will be obtained by one exposure, and the number of images visible on development will be proportional to the sensitiveness of the plate, provided all the other conditions are kept constant. Such an apparatus—a simple pinhole camera with twenty-five holes—

constitutes the sensitometer I have the honor to bring before you. It is convenient to make the smallest hole about .004-inch in diameter, and the remaining twenty-four of sizes increasing in a geometric series, such as that adopted by Mr. Spurge in his sensitometer, in which every third hole doubles in area. The convenience of this system is that it gives results comparable with those obtained by means of sensitometers depending on absorption of light in passing through layers of a medium the thickness of which varies in arithmetical progression, such as Warnerke's. The following table gives the actual diameters in inches of the holes (approximately circular) in my sensitometer:

No.	Diameter.	No.	Diameter.
1	.0640	14	.0143
2	.0570	15	.0127
3	.0508	16	.0113
4	.0452	17	.0101
5	.0403	18	.0090
6	.0359	19	.0080
7	.0320	20	.0071
8	.0285	21	.0064
9	.0254	22	.0057
10	.0236	23	.0051
11	.0202	24	.0045
12	.0180	25	.0040
13	.0160		

By making the distance between the holes and the sensitive plate 2.5 inches, by giving a uniform exposure of thirty seconds in all cases, by using candles of the same composition, and by developing always in the same way, very constant results may be obtained. It is to be observed that no mention is made of the distance between the candle and the sensitometer. It simply does not matter; the distance may be varied within wide limits without affecting the result. It is, of course, true that the intensity of the light falling on any particular pinhole varies inversely as the square of the distance of the candle from it; but the size of the image on the plate varies in the same ratio, and, consequently, its brightness remains constant. Now, it is only the brightness of this image that is measured, and not the total quantity of light. This is easily proved by using two candles instead of one, and placing them at different distances from the sensitometer, taking care, however, that the images do not overlap. Each candle will give the same number of images, and the same as if it had been employed alone. Hence, all that has to be considered in regard to the source of light employed, is its intrinsic brightness. It would, doubtless, be possible to use magnesium; but the exposure would have to be inconveniently short, and the excess of blue rays is too great. For many reasons, candles are most convenient. Candles vary considerably as regards the quantity of light they emit, and this is true even of those parliamentary candles, which are still the only legal standard of light. I do not know whether the relative brightness of various candle-flames —as distinguished from the total light emitted—has been the subject of investigation, but it is at least probable that, with candles of the same composition, the brightness of the flame is more constant than the total light. I would suggest always using the best paraffine candles with this form of sensitometer, as being easily obtainable.

The only part of the sensitometer that is difficult to make is the perforated plate. After trying various methods, I succeeded best with the simplest. I began at first with carefully made little drills and a lathe, but now I find a few ordinary needles and an oil-stone all that is necessary in the way of tools. A micrometer of some sort is, of course, necessary to measure the holes when made. I use tinfoil for the smallest holes, making a number of holes in little bits of foil, and picking out those of the right size and gumming them on a card with twenty-five larger holes punched in it. For the larger sizes I use thin aluminium foil, and find it an admirable material. It would, doubtless, serve equally well for the smaller sizes. Having got the plate made, the next thing is to keep it clean and free from dust. It should be examined with a magnifier before use, and, if necessary, lightly brushed with a fine camel's-hair brush.

Although the distance of the candle is theoretically of no importance, practically it is convenient to place it about eighteen inches or two feet from the sensitometer. Images of a sufficient size are thus obtained, while the divergence of the rays is not great enough to introduce sensible error.

In conclusion, I show examples of the results obtained with this sensitometer.

DISCUSSION.

Mr. Spurge asked whether Mr. Donkin had found that, whereas with the small hole the image of the candle was quite sharp, when the larger hole was used the diameter of the cone was much greater, and the image proportionately larger; and did this affect the results? He would also ask Mr. Donkin if he took the minimum reading. He had found that this did not always agree with the reading when a glass positive was taken.

Captain Abney thought the instrument most ingenious, but as regards principle, he did not consider it any different from Mr. Spurge's sensitometer. He had a set of small cells boxed off one from the other, and therefore protected from extraneous light. The source of illumination was a surface instead of an image of a candle; but, like Mr. Donkin's the distance of this source did not affect the question. For when the illuminated screen was placed close up, only a portion was utilized; when removed further away, a larger surface came into play, so that he really considered the two instruments to be on the same principle. He would draw the attention of the audience to the delicate gradations that the different images showed of the luminosity of a lighted candle. In fact, he could imagine no prettier way of showing the different illuminating power of different portions of the candle.

Mr. Spurge said that he had found the length of the wick of the burning candle had a very sensible effect on its luminosity.

Mr. Donkin, in replying, said that, in point of fact, the diffusion caused by the larger holes had no practical effect, as the first ten holes were never used in practice. He admitted the great similarity between Spurge's and this system. Spurge gave an evenly illuminated surface, whereas he gave a series of little images.

The Chairman said that he thought that there was no instrument so thoroughly unreliable as Warnerke's sensitometer, as the divisions never agreed in two specimens, and, therefore, he hailed the advent of any new form. He had used the Spurge sensitometer very frequently and with the greatest success, and handed round a screen made by this system.

THE DISPLAY OF APPARATUS AT MINNEAPOLIS.

As was to be expected, the novelties in apparatus shown at Minneapolis were few. The large Eastern factories made no special exhibits, the cost of transporting merchandise so far northwest being an item of considerable expense. Nevertheless, the local merchants of St. Paul and Minneapolis exhibited quite a number of the new things from these Eastern manufacturers.

The most prominent and the largest exhibit was made by Zimmermann Bros., of St. Paul. Here was found everything that the photographer needed, both professional and amateur. Dallmeyer lenses of all kinds and sizes, and suited to every conceivable service. Platyscope lenses in great variety, and also the new "Aristoscope" lens, which attracted considerable notice for its good qualities and moderate price. A large variety of the Climax cameras, with the ingenious Benster holder for studio work, were also shown and interested many. Novel, Novelette and Fairy cameras, with their ingenious arrangements, were seen in this prominent exhibit. Also the new Patent Phantom camera, light, neatly constructed and having a longer range of focus than any other camera of the same kind that we know. It will take a lens with as short as 3 inches focus and also one as long as 22 inches, and folds into a space only about 3 inches thick. Several varieties of Detective cameras were also seen—Schmid, Satchel and Climax. The Satchel Detective camera is one of the most perfect of these; its outward appearance being an exact copy of an ordinary hand-satchel, with none of the usual attachments of the camera visible.

The Cooper enlarging lantern was, perhaps, the most interesting piece of apparatus to most of the photographers at the Convention. At various points in the exhibition building were to be seen a number of evidences of the applications of this lantern to bromide enlargements. It is thoroughly well adapted to its work, can be used with oil or daylight, and was designed by Mr. Cooper, an acknowledged expert at this kind of work.

Our space will not allow us to say more about the many interesting things to be found in the exhibit of Zimmermann Brothers. It is sufficient to say that they are among the most enterprising of the merchants of the Northwest, and their exhibit was an evidence of this fact.

O. H. Peck, of Minneapolis, another of these enterprising Northwestern merchants, had a large and very interesting exhibit. Here we found cameras of all sizes and for all uses, burnishers, tripods and the accessories of the studio. The space of the exhibit was filled with all the various appliances and apparatus needed by the photographer, well displayed and showing many of the modern improvements.

The Blair Camera Company had, as usual, a large and well-arranged exhibit. Here was found the well-known Lucidograph and Reversible back Cameras. Champion Cameras of various sizes, English Compact Cameras and others. The Camera extension was also seen in its various applications, enabling the owner of a small-size camera to use it for making pictures of a larger size. Feather-weight plate holders were shown in all sizes, also tripods in large variety, and all the requisites for the field and dark room.

The A. M. Collins Manufacturing Company had their usual exhibit of fine cards and mounts. The standard of excellence of the productions of this company still remains unsurpassed. The beautiful mounts to be seen in this exhibit were works of art in themselves, and add very materially to the artistic appearance of any picture. We noted a novelty in mounts that we think would add very much to the attractiveness of many pictures, especially those of children. This was the new Oxford Mount, made by the Collins Company; it is only for cabinet sizes, and consists of a card with embossed floral design border, upon which is another card in relief with serrated edges, upon which the picture is mounted. By having the border of one color and the relief card of another, some very pretty and artistic combinations are formed.

E. & H. T. Anthony & Co. had a large and very fine exhibit of work done upon their bromide paper. This consisted of views, portraits, groups, animals and special line work, enlarged with Cooper's lantern, and was remarkable for its clearness; the entire absence of any yellow tinge in the white parts of the pictures being a noticeable feature.

There was also a large display of pictures made in Europe upon the N. P. A. albumen paper. These consisted of architectural scenes, old ruins, portraits, groups and views of interiors. They were unequaled in the beauty of their finish, were exhibited by our publishers for the interest of the fraternity, and had many admirers.

The well-known Entrekin Burnisher was shown in quite a large display of the varieties. The various modifications of the roller burnisher were seen in all sizes, and some improvements were noted. The new "Victor" burnisher is an improvement on the well-known Eureka. The burnishing tool is movable by means of screws, so that in case of wear a new surface can be brought into use at a moment's notice, or any irregularity of contact between the roller and the burnishing tool can be readily adjusted. The turning of one wheel regulates the pressure on the card with great accuracy, and a simple device allows of turning back the roll when necessary.

The various dry plate makers had exhibits illustrating the use of their plates, Smith & Harrison, M. A. Seed, The Phenix and G. Cramer, the latter being notable for the large and handsome display of fine work, including the productions of some of the best artists of the country.

In our next issue we shall have something to say about the other exhibits.

All communications for the columns of the BULLETIN *should reach us on Monday preceding the day of issue, to insure their publication at that time.*

OUR ILLUSTRATION.

THE sweet little face and figure that makes up our illustration for this month is a grandchild of Mr. Rockwood, who, though so young, seems to show a deal of artistic instinct, as well as personal beauty. The picture tells its own story, and if there were anything lacking, it is supplied in the charming verse which Mrs. Ella Wheeler Wilcox wrote upon seeing the proofs. The pictures are printed from twenty-four different negatives which this little mischief sat for successively, evidently enjoying the fun, and in a degree appreciating the object. Mr. Rockwood describes her as a golden-haired, black-eyed, bunch of good nature, carrying mischief at a pressure of a hundred pounds to the square inch.

The photograph was printed on the N. P. A. sensitive albumen paper, and made on the Stanley plate.

PRESIDENT DECKER'S ADDRESS AT MINNEAPOLIS CONVENTION.

Ladies and Gentlemen of the Photographers' Association of America: It is with great pleasure I greet you, at this, the Ninth Annual Convention of our association, in this progressive City of the Northwest.

The exhibits in both the art and dealers' departments demonstrate that our progress is still onward and upward. We can scarcely realize the immense advance made in our art within the past few years. If we recall the quality of work twenty or twenty-five years since and compare it with our present display, we cannot but feel astonished at the grand progress made.

It does not seem that improvement can be carried much farther, when we know that we can secure the image of the laughing child in the fraction of a second; the horse trotting at a high rate of speed; the steamer under full headway; the railway train going at sixty miles an hour; and even the compressed air in front of a cannon ball. Scientists of all kinds and learned men of other professions are making use of our art for the advancement of human knowledge: the astronomer for making maps of the heavens and discovering worlds before unseen, even by the aid of the strongest telescopes; the physician for noting different stages of disease and for the purposes of gaining farther knowledge to lessen human suffering; the lawyer for demonstrating to the court or jury the genuineness or otherwise of a signature, and even the minister in his pulpit to illustrate his sermon.

But still our course is, must be, upward, onward. Let each one of us strive to add our part to the general advancement of our art-science. Let us strive and make our annual meetings a school of photography as well as a display of what we have done. Let our meetings be such, that when we return to our homes we have not only been delighted with the fine work seen and the "good time" had, but that we have learned something more of our art than we knew before. By so doing we will not only honor our profession but again honor ourselves.

To assist in carrying out this educational feature of our association, we will have articles read relating to the artistic, scientific and practical side of our profession and which I hope may call out beneficial discussion.

It would be of great benefit to our association, if we could confine the mere routine business of our meeting within the smallest compass and devote more time to the practical discussion of the various papers read.

The arrangements for our meetings at this building are nearly perfect. The art hall is better than any we have had at any previous meeting, and the facilities for the dealers' displays could scarcely be bettered. Messrs. Carlisle and Potter, who were appointed a committee to attend to the matter, deserve your thanks. In this connection I wish to say, that the managers of the Exposition Building have done all in their power to help us and make our meeting a success. They deserve and will have our thanks for their kindness.

The rules and regulations by your Executive Committee were adopted after thorough discussion and with the best interests of our association in view, and are such as we hope will meet with your cordial approbation.

At the meeting of the Executive Committee last January it was decided to appoint a sub-committee for the purpose of formulating a plan for the addition of a mutual benefit feature to our association. The plan has already been published in the *Journals* and will be brought before you by a report of the committee. Let me commend it to your earnest consideration believing, as I do, that it will be of great benefit not only to every individual member, but also to the association as an association.

If the plan of awarding medals or other recognition of merit be continued, some means should be taken to prevent the fraudulent use of our awards. Cases have been called to my attention where great injustice has been done to members of our association, by the unscrupulous use of a low award, by representing to the public that the highest had been given. Where such things are proven, the offending members should be expelled.

I would recommend also that in future awards should be made to employees. Let the dark room operator and the printers have due credit and awards in their specialties.

For many reasons, our association should have a permanent headquarters, two of which are that it would save expense to the association and the majority of the members, and that better facilities could be had for exhibition and meeting purposes than can usually be procured. I hope it will not be many years before we have such a home.

Next year being the fiftieth anniversary of the publishing to the world of Daguerre's great discovery, let us make it a jubilee, and each and every one of us strive to make our next annual meeting one long to be remembered. We should have examples of the daguerreotype and of the photograph of different dates on exhibition, and give the public some slight idea of the improvements and advancements that have been made in the half century.

I will detain you no longer except to hope that we may have a successful, instructive and harmonious meeting.

A PLEASANT EVENT AT MINNEAPOLIS.

TESTIMONIAL TO TREASURER CARLISLE.

A very pleasant "wind up" to the Convention occurred at the West Hotel on Saturday evening, July 14th. A party numbering about forty assembled in one of the spacious parlors of the hotel. Among those present we noticed, President Decker and wife, Mr. and Mrs. W. H. Clark, Mr. and Mrs. Thompson, Secretary Potter, F. W. Guerin, H. S. Bellsmith, Geo. Ayers, J. C. Sommerville, J. Edgeworth, Seth C. Jones, Ben. Pillgrift, Cook Ely, E. H. Stoddard, W. A. French, C. W. Motes and others. As Mr. Carlisle came from the dining room he was quietly escorted into the parlor by Messrs. Potter and Clark.

Mr. Bellsmith in a very appropriate address, on behalf of the many friends of the Treasurer, presented Mr. Carlisle with a handsome and valuable gold-headed cane, and a purse containing $50 in gold. The head of the cane being engraved: "Presented to G. M. Carlisle by friends in the P. A. of A. 1888."

As Mr. Bellsmith handed the cane and purse to Mr. Carlisle it was accompanied with an outburst of applause.

Mr. Carlisle although completely surprised and visibly affected, accepted the gifts, and in a remarkably strong speech thanked the donors for the expression of their appreciation and good will. Among other things Mr. Carlisle said he hoped to see the time when the P. A. of A. would have a permanent and settled home and own their own building. This idea seemed to meet with the approval of those present as it was heartily applauded.

Short addresses followed by President Decker, Secretary Potter, Messrs. Motes, Guerin, Clark and Geo. Ayers.

Following are the names of those who contributed to the testimonial: H. S. Bellsmith, J. M. Appleton, Dr. Elliott, Seth C. Jones, J. Handy, C. Hetherington, Mr. Schultze, W. H. Potter, Mr. Dale, A. H. Plecker, H. S. Perkins, H. A. Hyatt, Edward Wuestner, G. Cramer, J. A. Know, W. A. French, C. F. Shape, H. McMichael, W. D. Gatchell, J. R. Pierson, S. C. Stein, F. W. Guerin, F. E. Hastings, Sidney P. Wells, R. Bronde, L. C. Overpeck, Albert Fearnaugh, O. W. Hodges, Frank A. Place, Cook Ely, W. I. Lincoln Adams, A. McDonald, George Ayers, C. H. Kirschner, O. P. Scott, C. W. Motes, Mr. Bowles, W. A. H. Clark, L. W. Seavey, F. O. Everett, E. A. Atwater, H. Hoffman, F. H. McCollin, W. G. Entrekin, J. F. Edgeworth, Mr. Blair, E. Katz, J. B. May, M. A. Seed, John Bartlett, George Eastman, J. M. Jordan, E. P. King, Benjamin Pelgrift, Charles Gentile, E. Decker, J. C. Strauss, G. D. Milburn, Thomas Pattison, G. W. Stoddard, Mr. Thompson.

UNPRECEDENTED SALE OF THE MIDSUMMER ANNUAL.

The "International Annual of Photography" has met with such unprecedented success that our publishers tell us that it is almost impossible to get the orders out fast enough. Even before the volume was seen, there were orders for over one thousand copies, and one customer writes us that he has exhausted his first supply entirely and wishes more immediately, having a large number of advance orders. He remarks that he never saw a book sell so well and that everybody takes it who sees it.

Other dealers also are already duplicating their orders.

It is certainly very gratifying to us to know that the efforts of Dr. Elliott and Mr. Harrison have been so well appreciated. The success of the "Annual" is the greatest of any book of the kind that has been issued for many years.

◆

Some Typographical Errors.—Shortly after the invention of printing the wife of a printer in Germany, while an edition of the Bible was in the press, on one occasion made a small but important change in the types. The sentence in Genesis in which it is declared that Eve shall be subject to her husband runs thus: "He shall be thy lord" (Herr). This was altered to "He shall be thy fool" (Narr). Many copies of the book got into circulation before the substitution of the one word for the other was discovered, for in black letter Herr and Narr much resemble each other. It is said that the practical joke cost the unfortunate woman her life, she having been condemned to the stake by the ecclesiastical authorities. During the latter part of the last century an awkward mistake occurred in this country in printing the Bible. In this edition the word "not" was omitted in the seventh commandment. For this piece of carelessness the then Archbishop of Canterbury imposed a heavy penalty. The edition, so far as practicable, was called in and destroyed, and a fine of £20,000 was inflicted upon the printers. The Roman Catholic Missal issued in France was once the subject of a ludicrous blunder. By the accidental substitution of a *u* for an *a* the word "calotte" (an ecclesiastical cap or mitre) was printed "culotte" (breeches). The error occurred in the directions for conducting the service, and the sentence as altered read: "Here the priest will take off his 'culotte.'"—*The Cornhill Magazine.*

ANTHONY'S
Photographic Bulletin.
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Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.,
and a corps of practical assistants.

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E. & H. T. ANTHONY & CO., Publishers.

PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

MINNEAPOLIS MEETING—FIRST DAY.

July 10, 1888.

The Ninth Annual Convention of the Photographers' Association of America, having been postponed from 10 A. M., was convened at 3 P. M. at the Exposition Building. *President* E. DECKER in the chair. W. H. POTTER, *Secretary*.

President DECKER—*Ladies and gentlemen of the Photographers' Association of America:* I take great pleasure in introducing to you Mayor Ames of this growing, progressing City of Minneapolis.

Mayor A. A. AMES, of Minneapolis, then addressed the delegates, welcoming them to the city. He said—*Ladies and gentlemen:* It may seem strange to you, but it is not to me, that I am always talking of an old chestnut. I have been Mayor of this city for three terms and I am always called upon to respond to a welcome until I have talked the hair all off the back of the City of Minneapolis. It is a pleasure to me, ladies and gentlemen, to meet you, the representatives of the photographic art of the nation, congregated in the City of Minneapolis, here within the sound of the great St. Anthony Falls. We feel a great pride that Minneapolis is selected as the place for the meeting of men connected with this great art. We think here, and we are, perhaps, a little egotistical, that Minneapolis is the only place in America where Conventions ought to meet, and we think so on account of her magnificient boulevards and parks, our splendid lakes and summer resorts, together with our suitable hotel accommodations, where we can take good care of and accommodate all who are willing to meet and spend a few days with us. Upon this very site, where you are to-day assembled, I remember as a barefooted boy the slave owners of the South coming here with their slaves for recreation and the benefits of our climate; and I also distinctly see how times have changed since then and how the little hamlet that then existed on this side of the river, containing only two hundred to three hundred inhabitants, while on the other side of the river there were scattered some four or five small houses where were also two tribes of Indians. From that—thirty six years ago—you see we have developed here a city of 225,000 people. It seems to me that I scarcely need to repeat to you that we claim to be the most remarkable city upon the continent of America, and on behalf of this commonwealth I am proud to extend to you the hospitality of our city, and in recommending to you to remain here just as long as it may be convenient. On behalf of the people of the City of Minneapolis, I extend to you a most hospitable welcome, and I not only do that, but I give you, photographers, the privilege of taking instantaneous photographs of all of us as a remembrance of a people who are hospitable.

I remember distinctly years ago when a boy (not old enough to be an old settler here) when you used to take ambrotypes and daguerreotypes, and I do not know what other kind of types, but I have a lot of them left myself at home. But what a great development has been made in the art since then. It has been almost as remarkable in this art of photography as it has been in the changes of this great city. This art you have developed as scientifically and as fully, perhaps, as that of any other science which exists in the known world. It is remarkable, and your exhibit which I have just scanned through to-day shows, that you, gentlemen, engaged in photography, have made it one of the sciences of the world. And we greet you, here in Minneapolis, in order that you may make a display among our people which I know they will appreciate. Again, I not only extend to you the freedom of the city, but I turn over the keys.

President DECKER—*Mr. Mayor:* On behalf of the Photographers' Association of America, I thank you and, through you, the citizens of Minneapolis for your kind attentions. We were told that we should receive a very hearty welcome when we came to your city. We were told that this climate was life giving—was full of ozone. We hope that your citizens will visit our exhibit and that they will be pleased. Again, on behalf of the association, I thank you.

The *President* then announced the meeting open for the transaction of business, and that the first business on the programme would be the calling of the roll. On motion the calling of the roll was dispensed with.

The *President* called for the report of Standing and Special Committees.

Mr. W. H. H. CLARK, of the St. Louis *Photographer*, then read the report of the Committee on the Progress of Photography. (See page 425.)

The *President* then announced that the next order of business was a selection of the location for holding the next annual Convention and that nominations were in order.

Mr. W. H. H. CLARK—I would like to say a few words on this subject. Being in the position that I am, I have heard a great deal of discontent expressed over the associations continuing to meet in the West. I have also heard that it is a western institution and should never go East. I should like to ask what the name on our banner means "Photographers' Association of America?" It means North, South, East and West. We have been West and in the Middle States, I think, about all the time this association has been in existence. We have met in New York, it is true, but Buffalo they count as a western city in the East. It is, as you see, on the divide, and the eastern photographers claim that it is a western city. And, I have heard a great deal of expression that unless the Convention holds its next session East there will be a secession movement. Some of you, I doubt not, know what that word means. It is a horrible word. It may mean the same thing for our organization. I don't want to see any such movement, and I would and do ask that our next meeting be held in the East. When we met last year in Chicago we voted to meet away up here in the Northwest, as it is termed. Now I propose to put in nomination a city away down East—Boston. Why not? I think the Yankees are alive; I think that they will turn out. We thought that the Northwest would turn out *en masse* at our Convention, if it was held at their very doors; but I am sorry to see the empty chairs and I am afraid that they will not be filled in the next three days. I am not saying this disparagingly of the photographers of the Northwest nor of our association. I hope that Boston will receive the nomination and I therefore nominate Boston as the next place of meeting.

Mr. H. S. BELLSMITH seconded the nomination of Boston and said: I had felt serious apprehension in regard to the location of the present convention up so far in the Northwest, but am glad to see so many faces from the East. It shows that the association has many staunch friends among the eastern protographers, and I think that it is but justice to them and those residing in the East, who have been unable to attend our Convention for the past four or five years, that we should go East and prove to them that we are not a western association, but that we are an a ciation of the entire United States and Canada, and I have the assurance of Mr. French that the merchants of Boston will give us a hearty welcome and that they have ample hotel accommodations.

Mr. C. W. MOTES—I rise to nominate Washington City. I do that because I know it to be a more central point, a point more accessible to the people in my section, more accessible even to the people of this section, than Boston would be, and then it is very accessible to Boston. It is not only a central point but a place of great interest to us all. We would all like to go to the capital, and I think that if Washington is selected that we will have the largest meeting that we have had any year at these Conventions, therefore I nominate Washington. Seconded.

Mr. EDGWORTH—I think that we had better, inasmuch as we have selected a hot month of the year to have our anniversaries, change the programme. Let us have it next January. Let us go to Florida and then there won't be a solid North against a solid South, and we will give all the photographers a chance to go down there and be comfortable in the month of January, and we will put in a pleasant time down there and I am sure that all northern photographers will be very glad to improve the opportunity and to have an excuse to go down where it is pleasanter and warmer, and I think that not only this corner of the country, where I understand that last winter the thermometor registered from 40 to 50 degrees below zero, but photographers from all parts of the country will be pleased to go. Now we have come up here where it is hotter than it is in Florida, and we have come here because it is known to be cold in winter. Let us change the time and have it in winter and go down to Florida. I nominate the City of Jacksonville as the place for holding our next Convention. The nomination was not seconded.

Mr. BELLSMITH—I would say in opposition to the City of Washington that I presume that the majority who have signified their approval of that place by their applause are hardly aware of the extreme heat of that city during July, August and September, and I presume that the main incentive and inducement to the majority would be the expectation of seeing Washington. I want to tell you that you will be badly disappointed. Almost every point of interest about Washington is closed up during the summer months. All the public buildings are inaccessible and a number of them under repairs, therefore it would be the very worst time of the year to visit that city and during the summer months it would be simply oppressive. If we should select either Philadelphia or Boston, excursions could be arranged whereby you could go to Washington for a very small sum and take in the city in one day and not be compelled to submit to it for a number of days.

Mr. MORTON, of Providence—I want to say one word in relation to Boston and in relation to New England photographers. During the past year I have had it mentioned to me that in all probability this institution was a western institution and would not care to go east of Chicago, and there has been several suggestions made in New England of getting up another organization of their own. It was also said that it was very difficult for them to come so far West, and therefore they could not take the interest in the association or in exhibiting as they could not spare the money to come so far. Eastern photographers do not make money like their western brothers; they only live while the western people make money and are used to traveling. The western people think nothing of striking across the continent, but eastern people stay at home and it is quite an exertion for them to get so far away. I think that if this Convention was to vote to hold its next meeting in Boston the photographers there would take a great deal of interest and endeavor to put a fine lot of pictures on exhibition. I don't know that I personally have any objection to going to Washington, but I am in favor of Boston and I think, Mr. President, that it would please the New England photographers.

Mr. CHARLES AITKEN, of Evanston, Ill.—Gentlemen that speak so much in favor of the East seem to forget that the second Convention was held in the East, and that men within three squares of the Convention hall in New York did not come to see it; they had an almost perfect indifference. Washington is a place where we would all like to go; we would like to see it.

If the eastern photographers are so poor that they cannot afford to attend a convention, they cannot afford to support a convention, and we had better keep it all ourselves. I am decidedly in favor of Washington, and as for the patronage of the association from the East it has not been equal to that from the South. If they are too poor to help sustain this organization, it might interfere with their starting one of their own and bearing all expenses. It is an absolute fact and one I think that no one will deny, that this association has always been sustained by western photographers. I am in favor of going to a place where there is other attractions besides photography. We would all like to see the wonderful public buildings of Washington. I am decidedly in favor of Washington!

The *President* then appointed Messrs. Bellsmith and Plecker as tellers, and further stated: There is a box here on the platform to receive the coupons which will find on your receipt. One of those coupons will bring considerable money to whoever is fortunate enough to draw the prize. If you will please drop your coupons in the box it will be all right.

Mr. FRENCH—While the ballots were being collected said: I attended an exhibition given by the Boston Society of Amateurs and I have seldom if ever attended a more interesting display of photographs. They have a large number of genuine amateurs and they have also a very fine class of professional photographers—photographers who are not jealous of each other—and they are ready to receive the Photographers' Association with a whole-souled welcome.

On ballot for the selection of location for the next convention the Secretary announced that Boston had received 52 votes; Washington, 48 votes.

The *President*—Ladies and Gentlemen, you have chosen Boston as your next place of meeting.

President DECKER—We passed over a little item of business under the head of committees because the report was not here. This was the report of the sub-committee on insurance. They were appointed at a meeting of the Executive Committee held last winter.

Mr. W. H. POTTER then read the report. (This report has already been published in the BULLETIN).

The *President*—Gentlemen, what will you do with this report? I think it will have to lay over until to-morrow before action is taken.

Mr. C. W. MOTES—I move, in view of the importance of the subject before the house, that the report be accepted and the matter be laid over until to-morrow morning at 10 o'clock for further action.

Motion carried.

The *President*—The next business in order is the appointment of a committee on nominations. I have selected three names and if the convention thinks best we can add two more. I appoint the following gentlemen as members of that committee: Mr. Plecker, Lynchburg, Va., *Chairman*; Cook Ely, Oshkosh, Wis.; Mr. Morton, Providence, R. I.; Mr. French, Boston, Mass.; Mr. Pearson, Pittsburg, Pa.

I wish, in naming this committee, to suggest that they nominate more than one man for the offices of President and Vice-President. I make this as a suggestion. There is nothing in the Constitution or By-Laws to say how many they shall nominate, but there are some special reasons which they will see that it will be desirable to do so.

I would also suggest that if any one has any desires for the nomination for any of these offices that they mention it to some one of this committee, so that they may have names to act upon when they come together.

Referring to judges on awards: I have been requested by a number of members who are to compete to state that it is impossible for them to select their judge to-day. You understand how the judges are to be appointed this year; the Executive Committee names one, the competitors name one and those two select a third.

We will postpone the naming of these judges until the first thing in the morning, and I will say that if the competitors do not give us the name of their man in the morning the committee will name all three. We have to do that in order that the judges may have sufficient time to make their award.

Mr. H. S. BELLSMITH—I want to say just a word. The Eastman Dry Plate Company, who I have the honor to represent, desire to present every member of this association with a handsome souvenir, and I have some tickets which I will distribute as the members pass out. I want to assure you that it is something worth having.

President E. DECKER then arose to read his annual address and was received by the association with great applause. (See page 466).

The *President* then announced that the hour for meeting was 10 o'clock A.M., and that he meant 10 o'clock and not 10.30 or 11 to-morrow morning, and the meeting will be called promptly.

Dr. ELLIOTT, of New York, asked if the meeting could not be held in the evening. He said: It is almost impossible to keep the members out of the exhibition and merchants' departments, and that if the meeting was held in the evening those departments would not be open. We had better meetings at Chicago in the evenings. If it is practicable I should suggest that the meetings be held at night.

Secretary POTTER said when he was here in the winter the proprietor of the West Hotel partially promised him the use of the Ladies' Ordinary of the West Hotel, but they were so crowded now that they were unable to let the association have it. We can get a hall about four squares from the West Hotel for five dollars for day sessions and ten dollars for night sessions, the lights furnished. But the officers feel that we would not have a corporal's guard present, as it would be impossible to meet there in the day time and have the exhibition here, and at night the delegates being unacquainted with the locality would not hunt it up. Now, we can meet here but for the question of lights, and I have no doubt but that we can get the people here if we can light it.

The *President*—If the Convention think proper to have an evening session we will procure a hall.

It was announced that the exhibitors of the art department would hold a meeting directly after the adjournment for the purpose of appointing their member for the committee of awards.

Mr. H. S. BELLSMITH—I understand that some arrangements were made to give a lantern exhibition to-morrow night. The gentleman who was to give this entertainment is here and prepared to give his exhibition, and if the hall can be obtained to-morrow evening at a cost of $10, I move that the same be obtained for a meeting to-morrow night.

The *President*—I would say that the exhibition is one that will be very interesting to every member of this association.

Mr. H. S. BELLSMITH—A part of the evening could be devoted to photographic discussion.

The question then being on the motion of Mr. Bellsmith to secure the hall, it was so ordered.

On motion, the meeting then adjourned until 10 o'clock Wednesday morning, July 11th.

SECOND DAY.

Morning Session, July 11th.

Meeting called to order by *President* DECKER.

The *President* invited the editors of the photographic journals to seats on the platform.

The first order of business was the reading of communications.

The *President* then read a communication from G. Cramer, of St. Louis, as follows:

Mr. President and Members of the Photographer's Association of America in Convention assembled:—I regret exceedingly that sickness prevents me from being with you at this, our Ninth Annual Convention. I had looked forward with pleasurable anticipations to meeting the fraternity and getting my share of the invigorating ozone supposed to be floating so superabundantly around and in Minneapolis. I had promised myself a most enjoyable time, and it is a sacrifice for me to miss it. Be assured that my thoughts are with you, and that I wish you a pleasant and profitable meeting.

May your deliberations be in harmony and good will, and for the best interests of the association.

With the heartiest good wishes to one and all the members of our grand and growing association, I am,

Fraternally yours,
G. CRAMER.

The *President*—Here is a letter I received some months since from one of the oldest photographers in the country, and, I believe, one of the old daguerreotypers, Mr. Jex Bardwell.

The *President* then read the communication, as follows:

Mr. E. DECKER,
President Photographers' Association of America:

DEAR SIR,—A day or two ago I received a letter from a gentleman in New York, who desired to purchase some old works on photography that I have, and had, in consequence of adverse times with me, offered for sale, and including the books that had rendered so much good service to the craft in the bromide and silver saving suits. Now, in consequence of the kindness of the association, in their remembrance of the matter, and the aid they so generously sent me, and in the unanimous action of the members, prompt me to make an offer of the said books to the association, if they would desire to receive them, free of any cost or price, but under the following condition: to have and to hold so long as the association exists; but if the association breaks up or becomes defunct, then said books revert to John Jex Martin, my grandson, without further consideration.

I am, yours fraternally,
JEX BARDWELL.

DETROIT, September 29, 1887.

Mr. H. S. BELLSMITH—I have a verbal communication to make which follows upon this letter very properly.

While in Washington, a few months ago, I met Professor Smiley, who is the professor in the Smithsonian Institute, in the employ of the Government, a man who is an exceedingly enthusiastic photographer and devotee of our art. He stated that he has been hard at work trying to get an appropriation from the Government to establish a Department in the Smithsonian Institute—a Department of Photography—and he desired me to state to this association that he would be very glad of any assistance from the association, or its members individually, in gathering together any articles of interest that would serve to illustrate the history of photography and old daguerreotypes; the earliest cameras that can be found, and articles of that nature; and, I think, if there is any material that Mr. Bardwell proposes to give the association, if we could make some arrangements to turn them over to Mr. Smiley, it would be a very valuable contribution.

The *President*—I presume that we could accept this offer from Mr. Bardwell, and loan them to the Government, under the conditions that Mr. Bardwell proposes in his letter. I think that Mr. Bardwell would be perfectly willing, if the Government should establish anything of that kind, to have these books go there, where they would be accessible to every photographer in the country—the information contained in these books. If Mr. Wilson was in the room he would be able to give us some idea of the value of these books, as he had a great deal to do with fighting the old bromide patents some years ago, which, perhaps, some of our younger members know very little about; and he could tell you of how much benefit Mr. Bardwell's books had been to the photographers of the country. It saved them thousands upon thousands of dollars.

This communication may lay over, if you want to think about it, and come up again.

Mr. BELLSMITH—The same communication was received at the meeting during my term of office, last year, and was referred to the Executive Committee. No action was taken. Now, this is Mr. Bardwell's second offer, and if the Secretary can be authorized to communicate with Mr. Bardwell, that the Government had already taken steps for the establishment of a Department of Photography in the National Museum, I think Mr. Bardwell will be very glad to have these things go into the National Museum. We are transcient, moving from one place to another, and if these books are in our care they will not, at all times, be so accessible as if they were in the Smithsonian Institute.

I move that the Secretary be authorized to communicate with Mr. Bardwell, and to accept the contribution with thanks, and also to write to Professor Smiley to make such arrangements as he can to further the organization or institution of a Department of Photography.

Professor Smiley told me he had every encouragement from the heads of his department, and they expected, before next year, to get an appropriation and to have a department at the National Museum.

The motion of Mr. Bellsmith was seconded by several aud unanimously carried.

Mr. JAMES LANDY, of Cincinnati—I move that we receive Mr. Cramer's letter, with regrets for his inability to attend our convention, and appoint a committee to extend the sympathies of the association to him in his present affliction, which I think is only temporary. I think a telegraphic dispatch to that effect would have a tendency to make him well.

Seconded by several. Carried with enthusiasm.

The *President* then appointed as said Committee: James Landy, W. H. Potter, W. H. H. Clark.

Mr. C. D. MOSHER, of Chicago—I think it would be a very good plan to make a petition to Congress, praying them to grant this appropriation for photography, and to have it signed by every member of this Convention.

The *President*—That will come more directly under the head of new business, will it not?

Mr. MOSHER—I don't want anything to pass before this is attended to.

A communication was then read from W. J. Althaus, written for Mr. Benecke, as follows:

Mr. President and Members of the Photographers' Association of America: Mr. Benecke, whose sympathies have ever been with the Photographers' Association of America, desires me to suggest for consideration the following item, which if favorably received and adopted would prove of great interest and usefulness to the photographers of this country.

It is this: Since it is very desirable, and of historic interest, that the progress in our art be recorded from year to year, and as well that the durability of our productions be palpably demonstrated,

Be it Resolved, That a small number, say six, of the best photographs exhibited at this and every suceeeding Convention, be selected and left in charge of the Secretary, whose duty it shall be to place these pictures on exhibition at every Convention.

To carry out this project would not involve any very great expense to the association, and these exponents of the present state of our art would, no doubt, be gratuitously contributed by those whose work was considered to have reached the highest perfection at the time.

Most respectfully submitted by

W. J. ALTHAUS, for
R. BENECKE.

The *President*—An excellent suggestion, and I would like to have some action taken on this during the day. I think it would be a very fine thing. We would all like to see a half a dozen each of the best pictures that have been exhibited at our former meetings, and from year to year we could have a better chance to see our progress as we go along.

What will you do with the communication? There really is a resolution offered in the communication as follows:

"*Be it Resolved*, That a small number, say six, of the best photographs, as exhibited at this and every succeeding Convention, be selected and left in charge of the Secretary, whose duty it shall be to place these pictures on exhibition at every Convention."

Resolution seconded.

Mr. W. H. H. CLARK—There is nothing in the resolution about the size of the pictures. If the association has a very long life, as we hope it will, will it not require a great deal of space to exhibit them each year? I am in favor of the resolution, but is there not something that can be added to it relative to the size of the pictures?

The *President*—The resolution says, "Those considered the best pictures" whatever they are, let them be cabinets or 20 x 24's.

Mr. Clark—I only thought of the space they would occupy.

Mr. Jas. Landy—This collection of pictures would be very interesting to all, to show whether we are progressing or going backward.

Mr. Stoddard then called for the question on the motion before the house, which motion was put and carried.

Secretary Potter—We will have the judges select six pictures.

The *President*—The next business in order is unfinished business.

The *Secretary*—The first unfinished business would be the selection of our Judge of Awards, a very important matter.

The *President—Ladies and Gentlemen of the Convention:* The Executive Committee have decided to appoint as the judge which they were to select, Mr. Cook Ely, of Oshkosh, Wis.

The *Secretary* announced that the competitors had chosen as their judge, Mr. George G. Rockwood, of New York, and that Mr. Ely was the second choice of the competitors, so that there was harmony so far, and that these two would select a third judge.

The *President*—I would like to announce the name of the third judge before closing. Will Mr. Rockwood and Mr. Ely please make the selection.

Mr. Bellsmith—I would suggest that the subject of Life Insurance be taken up this morning, which was laid over from yesterday.

The *President* called upon Mr. Potter to read the report of the Committee on Life Insurance.

Mr. Potter read the report as published in a former Bulletin—The Mutual Benefit Feature—and continued:

Mr. *President and Members of the Photographers' Association of America:* Your Executive Committee, when in session at St. Louis, January 11th, of this year, saw fit to entertain a proposition to add to our organization a beneficial feature, and thereupon appointed a committee to formulate plans, etc. That committee immediately took steps to obtain data upon which to base what they hoped might be an acceptable plan to be adopted at this Convention.

We first took under consideration changes which we deemed necessary in our Constitution and By-Laws to operate such a feature under our charter; and the amendments proposed by your committee, and to be voted upon at this Convention, have already been published in the journals that the members might have ample time to weigh the matter well and vote upon the same understandingly.

There is no longer any question about the demand for a beneficial feature of our society, for we have received letters from every part of the country urging the importance of such a measure, which will have a twofold purpose:

First—By this means a member can at actual cost protect his family and add to his estate the moment he avails himself of the proposed plan.

Second—This beneficial feature will tend to strongly cement together our membership, and as our plan proposes to pay as many dollars as there are members, it becomes at once important to each member that our association grow. It is therefore obvious that our ranks will be largely augmented.

Probably the wisest step this association ever took, in a legislative sense, was when they made it a penalty for a member to neglect to pay his dues and required him to pay an entry fee of three dollars for reinstatement.

Previous to the passage of that amendment to our by-laws we had no thorough organization, and men paid their dues or not as they pleased, and you could not count from one year to another upon any one being held responsible for the necessary expenses of a Convention. Now, we are pleased to observe, members keep their dues paid in self protection.

In regard to the importance of this beneficial feature as a protection to our families, we must look this fact squarely in the face although a gloomy contemplation: At every Convention some member has met with us for the last time. Death never fails to claim its victims from among us from year to year, and great good can be done for the bereaved ones by the payment of such sum as it is possible for this association to meet, without feeling the draft upon us individually.

It has been said that there are plenty of opportunities to insure without the Photographers' Association of America going into the matter. That, gentlemen, is unworthy of us as business men. If every organization took that position there would be no such thing as mutual insurance.

It would seem we ought to have in our

ranks, men fully competent to grapple with this question, especially as we have the experience of similar organizations as a guide.

The Odd Fellows' Beneficial Association of Rhode Island has been in existence twenty years, and although the stock insurance companies said it would not succeed, it is stronger to-day and in a more flourishing condition than at any previous period of its history, and has done untold good to widows and orphans.

The enlightened communities of to-day are rich in mighty palaces reared by various commercial enterprises, and, while contemplating their grandeur, can we suppose for a moment their projectors took the ground that there was already enough, and that any effort for good was unnecessary on their part. Let us turn our back upon that argument at once, and use the talents and opportunities for good to our fellow beings that a wise Providence has placed within our capabilities.

The opportunify is ripe, gentlemen, to give this measure a fair trial. We have discussed it for seven years. Let us act like intelligent men, show that we are competent to do what several organizations have done, that did not have a tenth part of the foundation that we have for such an enterprise. Insurance is now a public approved duty, to accomplish which no well-meaning man can afford to neglect, though he must practice self-denial to some degree.

There is probably not one of our members who would not find pleasure in making such provision, when once his attention is properly called to the importance thereof.

Our proposed plan, it should be remembered, affords this protection at actual cost, and is the popular plan of the present period. We find there are now six hundred and five known organizations practicing the assessment plan of insurance in this country alone. Two hundred and thirty-four of these made returns to the Mutual Benefit Association of America, as per their published proceedings. Of these there are forty-five under the auspices of Masonry, thirty-four Odd Fellows, fourteen secret —so called—seventeen trades and professions, and one hundred and twenty-four having no other object than mutual insurance. This speaks volumes for the assessment plan.

The Masonic Relief Association of Eastern Massachusetts has done business eighteen years at Springfield, and is the pride of the city and a credit to its members.

A recent report shows on hand a sinking fund of more than forty thousand dollars, and growing stronger each year.

The plan we propose, it would seem, could be successfully carried out, and the annual dues and entry fees, together with our income from letting space at our Conventions, should pay all expenses and increase our sinking fund.

The office of Secretary and Treasurer could be, we think, to our advantage merged into one, having a permanent headquarters or home office, and a competent member found, who would accept a living or fair salary, to devote his time to the interests of the association. This would be an improvement over the present plan of dividing the duties between two men, which could be better done by one. Members would know at all times where and when to appeal for information, etc.

Your committee would recommend that this association proceed to ballot upon the question, taking up the proposed amendments in the order in which they have been published, and continue to legislate upon this subject until a satisfactory plan shall be reached, that will enable us to offer our members insurance or mutual protection at actual cost under our own management.

We can scarcely hope to reach a perfect organization the first year. We shall have much to learn from experience, and no doubt will feel called upon later on to modify our plans to meet demands which may arise.

Your committee have endeavored to formulate a plan, at once simple and readily understood. Once the ship is launched, we feel confident ways and means will readily be found to successfully carry forward this noble work.

At this time a member who does not attend our Conventions gets but little for his two dollars paid as annual dues, but when we have established our beneficial features, a member immediately has opportunity to add to his estate, and should he be taken away from those dependent upon him the next day or hour, his estate is just so much augmented.

There has been so much demand for this measure that your committee are of the opinion that our association can do no better than to give the plan proposed a fair trial at once, and trust the members will see the importance of entering each one heartily into this measure, giving the same support by subscribing and paying at this Convention the sum of one dollar as one assessment in advance, as proposed by the By-Laws herewith attached and marked "No. I."

Your committee have received numerous

letters from members who were unable to attend, in which they strongly expressed the hope that those present would see to it that this Ninth Annual Convention should distinguish itself and make it a red-letter Convention by bringing to a focus the question of insurance, so long demanded by so large a number.

G. M. CARLISLE.

The *President*—Gentlemen, you have heard the report of the committee; what action will you take thereon?

Mr. CLARK—I move the report be accepted.

Mr. BELLSMITH—I move that it is not the wish of this association that we should adopt this life insurance plan.

Mr. CLARK then changed his motion to read: that it is the sense of this meeting that we adopt this insurance feature. Seconded.

Mr. MORRIS, of Pittsburg—Previous to putting the motion, I would like to ask whether it would be compulsory upon the membership?

The *Secretary*—No, sir; not at all.

Mr. ROCKWOOD—Would it not be well to refer this matter to a committee to see whether it is at all practicable or not. I don't know whether the report of the committee discusses the general proposition or not. I would say, that if the question has come up for discussion, we had better refer it to a committee to report, as to mixing up life insurance, dentistry, horseshoeing, and other things with our business.

I move that a committee be appointed to report a short time hence as to the advisability of entertaining this proposition at all.

The *President*—That can only come in as an amendment to Mr. Clark's motion.

Mr. ROCKWOOD—I cannot conceive with my present knowledge of the matter how we can organize an insurance company here any more than we can organize any other kind of business. Life insurance, as I understand it, is an expert business. We know how we feel when people undertake to make photographs and enter our domain, and now I want to know, whether it is practicable for us, non-experts, to entertain this scheme of life insurance, and whether we have knowledge enough to do it.

I move as an amendment to Mr. Clark's motion that there be a committee appointed to report to this Convention at its next session to-morrow morning as to the advisability of adopting this insurance plan. Amendment seconded.

Mr. POTTER—I understand this motion is to meet Mr. Bellsmith's opposition, and whoever wants to oppose it. I would suggest to Mr. Clark in making his motion, to move the adoption of this report with the understanding that it is voted on now, subject to revision, section by section, and then all those opposed to having anything to do with insurance can vote "No," and we can get the sense of the members. So far as the appointment of another committee is concerned, this committee was appointed for this same purpose, and the report read yesterday was the same plan as that of the Odd Fellows and Masonic Fraternity. It is a beneficial and not an insurance plan. We can find out what the sense of the meeting is, and whether we shall take up that much time with it or not.

The question then being on Mr. Rockwood's amendment to Mr. Clark's motion: that there be a committee appointed to report to this Convention at its next session. The amendment was defeated.

The question then being on the motion of Mr. Clark, that a vote be taken as to the sense of the Convention, with the understanding that it does not bind the association to anything at all, but is merely the sense of the meeting.

Mr. MORTON—Would it not be well to have it understood that if this should be the sense of the meeting, that no member of the association will be obliged to become a member, only those who see fit would need to join it.

Mr. CLARK—It is compulsory upon members to become members of the association before they can become members of the Benefit Feature, but it is not compulsory the other way.

The motion of Mr. Clark then being put, Mr. Bellsmith called for a rising vote, which stood: Ayes, 41; noes, 46.

The *President* then called for the report of the Committee on Nominations.

Mr. FRENCH then presented the report.

ORIGINAL REPORT.

Committee on Nominations.

For *President*—H. McMichael, Buffalo, N. Y.; S. S. Stein, Milwaukee, Wis.

First Vice-President—George H. Hastings, Boston, Mass.

Second Vice-President — J. M. Appleton, Dayton, O.

Third Vice-President — W. H. Jackson, Denver, Colo.

Secretary-Treasurer—G. M. Carlisle, Providence, R. I.

Mr. FRENCH—In drawing up the report the committee has acted upon the suggestion of President Decker to nominate two members for the office of President, and it has likewise been deemed a very good measure to make the offices of Secretary and Treasurer one office, which will necessitate a third Vice-President, in order to make up the requisite number of members for the Executive Committee.

The *President*—If the offices of Secretary and Treasurer are combined in one there will have to be an amendment to the Constitution to do so, and while the experience that I have had in the past year convinces me that the two offices should be combined, and that one man can do it very much better than two, with the exception of the time during the meetings of the Convention. A resolution will be necessary for a change in the Constitution to carry it into effect, which will have to be offered to-day and lay over for one day before action can be taken thereon. Mr. French, as one of the committee, you have made a report which will necessitate a change in the Constitution. Have the committee prepared resolutions covering the change?

Mr. FRENCH—We were aware of that, and we thought best to leave it in the hands of the President. I move that the President be empowered to appoint the necessary committee to draft an amendment to the Constitution for merging the two offices into one.

The *President*—I would suggest that a committee be appointed for the purpose of bringing it in the correct form in the morning.

Mr. EDGEWORTH—I rise to a point of order. I think you cannot appoint a committee to change the By-Laws until it is voted to merge these two offices into one. If there is anyone here that wants to amend the By-Laws, let him put it in writing and have it here in the hands of the Secretary, and to-morrow we will vote upon it, and then is the time to appoint a committee.

The *President* ruled that the point was not well taken, and said that there was an article in the Constitution which stated that the Constitution could be altered or amended by a three-fourths vote of the members present at any regular meeting.

The *President*—I now have the pleasure of introducing to you Mr. W. H. Jacoby, of Minneapolis.

Mr. JACOBY—*Mr. President, Brother Photographers and Sister Photographers:* I wish to announce that to-morrow afternoon the photographers of Minneapolis and St. Paul extend a complimentary excursion and tour of Lake Minnetonka, on the steamer Belle of Minnetonka. The photographers naturally, being poor in purse, feel that it would be inadvisable to make the excursion entirely free, but we have managed to make it so that the railroad fare will be but fifty cents, and the boat, band and refreshments on the boat will be at the courtesy of the Minneapolis and St. Paul photographers. The train will leave on the Minneapolis and St. Louis road at the Minneapolis depot, at the corner of Fourth Avenue North and Third street, at 2 o'clock prompt. It is advertised on the tickets as 1.30, but we have changed it to 2, and everyone should be there because the train will leave at that time sharp. I would say that we would like to have everyone go. We have made provision for one thousand people. The train will arrive back here at about 7 o'clock, giving about three hours ride on the lake, the balance of the time will be on the train. The round trip will be only fifty cents.

I would also say that we have made arrangements for an excursion to Minnehaha Falls, over the Minneapolis and Lyndale Motor Line at 6.30 this evening, returning about 8 o'clock this evening, or later, just as you like. This will be entirely free. We want all the photographers, and every man and woman that has attended the Convention to go. The Motor Line trains leave on First avenue South, between Washington avenue and Third street. The trains will be there if you come, and I think that a great many would like to go. I will say that there will be plenty of cars to accommodate all and make it pleasant.

The *President*—Will you try and take a vote to enable us to see how many will go to Minnehaha this afternoon, leaving at 6 and returning at 8 o'clock or later.

The vote was then taken, nearly everyone present signifying their intention of going.

Mr. JACOBY—I would like to say in regard to the excursion to Minnetonka, that all the galleries both in Minneapolis and St. Paul will close on the afternoon of the excursion for the purpose of attending. I would like to see all who have field cameras, to take snap shots on the lake, take them along. We will go to Lake Park and there will board the boat, and our photographer, Mr. Ingersoll, of St. Paul, will make a negative 18 x 22 of the boat as she starts, when she will be placed in position for the purpose, and as soon as he has got his picture, we will make a tour of the lake and return home. We will be accompanied by a band of twenty pieces, and we will try to make the excursion as great a pleasure as Minneapolis and St. Paul can give. You can get tickets at the office here in the Exposition Building, at the Nicollet House, at the West Hotel, and on the train, and of the committee consisting of myself, Mr. Beal, Mr. Swan, Mr. A. B. Rugg, and Mr. C. A. Zimmerman. We think there will be plenty of chance to get tickets.

The *President* announced that Mr. Motes, the First Vice-President, would be at the office opposite the Treasurer's directly after the close of the session for two hours, to sign return certificates for all those who desire.

Mr. APPLETON, of Ohio—I move that a vote of thanks be extended to these Minneapolis and St. Paul photographers for their invitation. Carried unanimously.

The *President*—Mr. Althaus requested that we should hold a session this afternoon for the purpose of determining the Cramer prize, but I don't know whether that was to be decided to day.

The *Secretary*—I think we had better have the meeting this afternoon anyway.

The *President*—The next business is the appointment of tellers and the announcement of the mode of election. This is for the election which takes place to-morrow. As those tellers, I will appoint Dr. Elliott, Mr. Doerr, and Mr. Mitchell, of Kansas City.

The mode that we propose for the election I will state and give our reasons for it. Heretofore, for a number of times, there has been great dissatisfaction about the small number of votes that finally elected the officers. So many wonld leave the room that by the time the last vote was taken there would not be more than one fourth or one-third the number in the room who were present when it first commenced. We thought it very much better to have tellers at the doors, those tellers would receive the votes as the members enter, from tho opening of the session until the close of the session to-morrow, when the announcement of the election of officers will be made, and I hope that it will prove much more satisfactory than previous ones have been.

(*To be continued.*)

Bibliography.

THE INTERNATIONAL ANNUAL OF ANTHONY'S PHOTOGRAPHIC BULLETIN. New York: E. & H. T. Anthony & Co. London: Henry Greenwood & Co., 2 York street, Covent Garden.

This is a new volume of photographic articles by the best writers in the world. It covers over 640 pages of printed matter, with nine full-page illustrations and a large number of wood cuts. Some of the articles are complete monographs upon the topics which they discuss. For example, there is "Astronomical Photography," by W. Jerome Harrison, a very complete article upon the subject. Rudolph Spitaler, of the Potsdam Observatory, writes upon "Photographing the Planets" in a thoroughly exhaustive way. Col. A. C. M. Pennington, of Fortress Monroe, has a very complete paper upon "Photography Applied to Military Purposes." Lieut. H. A. Reed, of West Point, discusses "Photography Applied to Surveying." Captain Pizzighelli describes in great detail the newest developments in "The Platinum Print," giving a most exhaustive paper upon the subject. "Photomicography" is most fully treated by J. W. Haigh. . Dr. Maurice N. Miller gives a complete method of "Photo-zincography" for amateurs, which is beautifully illustrated with the author's own drawings. These are only a few of the more valuable articles; but when we note further that the art side of photography is discussed by such men as Dr. H. W. Vogel, H. P. Robinson, S. H. R. Salmon, W. H. Potter and others; that lenses and their uses serve as topics for Ernest Gundlach, Fred. H. Evans, O. G. Mason, W. E. Partridge; that the new flash light is discussed by John Bartlett and others; that development is the theme for half a dozen writers, and that each phase of photographic work has some good worker to explain it, then our readers can appreciate in a small degree the wonderful store of useful knowledge crowded into this handy volume. There is scarcely a topic in our art that has not an able author to discuss it in this new summer annual.

Points of additional usefulness are a number of tables, some especially calculated for this volume, and a very complete list of photographic societies of England and her colonies, together with the United States and Canada. Two hundred and twenty articles upon every conceivable phase of photographic work and by the best men of the world must necessarily make the volume indispensible to every professional and amateur photographer.

BITS OF NATURE. Ten Studies in Photogravure. Published by Nims & Knight, Troy, N. Y.

This is a handsome portfolio about ten by twelve inches, containing a series of excellent photogravures of scenes in and around New York and upon the Hudson River. For those who like to have pretty pictures in a handy form for the library or parlor table, we have not lately seen a better collection than these before us.

A HISTORY OF PHOTOGRAPHY. By W. Jerome Harrison. Bradford, Percy, Lund & Co., England.

This is the English edition of Mr. Harrison's well-known treatise upon the development of the photographic art. It is illustrated with portraits of Niepcé, Daguerre, Fox Talbot, Niepcé de St. Victor, Major Russell, B. J. Sayce, Dr. Maddox, H. P. Robinson, A. Poitevin, W. B. Woodbury, Captain W. de W. Abney, and J. Traill Taylor. The most attractive thing about the volume is, that the historical parts are woven together in a most complete manner, and the reading of it, instead of being the conning of a number of isolated events, unfolds a complete story in a very charming manner. Those interested in the subject should certainly get this new and valuable addition to our knowledge of the rise and progress of photography.

THE AMATEUR PHOTOGRAPHER.

By Ellerslee Wallace, Jr., M.D. Philadelphia: Porter & Coates.

This is the third edition of a well-written manual for beginners in photography. The extensive experience of the author and his great enthusiasm for his subject are sufficient guarantee that the topics are well treated. It is well-written, well-printed and now fully up to date.

THE PHOTOGRAPHIC NEGATIVE. By W. H. Burbank. New York: Scovill Company.

This is a concise compilation of the various processes used to produce the photographic negative. The methods of preparing a large variety of sensitive surfaces are given in detail and with clearness. The volume is well presented, both typographically and otherwise, and is a valuable addition to our library.

◆

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

Q.—L. L. L. writes: Please let me have some imformation about solar printing by the camera system.

A.—We do not quite understand our correspondent. He should give us a more definite question. If he wants to know of a solar printer he should write to E. Long, Quincy, Ill.

Q.—R. G. B. writes: "I send cabinet picture of a gentleman in regalia," and asks us what we think of it.

A.—We have not received any such picture and therefore cannot give him our opinion.

Q.—W. C. T. incloses photograph and writes: Please give the cause of my trouble with the prints? I first rinse them in two changes of fresh water. To redden them I use one teaspoonful of salt in a gallon of water. Wash in two more changes of water. Tone with gold chloride, neutralized with sodium bicarbonate. Place them in fresh water till all are toned. Fix in bath one pound of hypo in one gallon of water neutralized with ammonia. After fixing, immerse in salt solution two handfuls in gallon of water and wash in two more waters. Finally place in javelle water one ounce to a gallon of water, and wash in two changes of water. They are now ready for mounting. What will be the effect if allowed to become too red in first salt solution.

A.—Your principle difficulty is in not making a sufficiently deep print. Print till details in shadows are lost; they will come out all right in toning. Fume the paper before printing, omit the salt bath before toning; simply wash in clean water. Don't have the toning bath too alkaline.

Q.—J. G. A. writes: Will you answer the following questions in the next issue of your valuable BULLETIN. I have two lenses, No. 3 E A Rapid and an E A view lens, that covers the same plate. I wish to take a trip for landscape work, which lens will give the best satisfaction? What is the best preparation for retouching the negative? What will erase the retouching if such be desired?

A.—If you do not wish to make any instantaneous pictures, the E. A. view lens will give the best results if it covers the plate perfectly. For instantaneous work a doublet lens (E. A. Rapid) is indispensible. Gihon's opaque is generally used for spotting negatives, and also Faber's pencils and solid lead points. You had better get one of the good books on retouching, if you wish to know details of methods.

Q.—J. B. L. writes: In No. 7 of Volume 18 (1887) of the PHOTOGRAPHIC BULLETIN was a paragraph entitled "How to make blue prints brown." Looking over back numbers recently, in search of some information as to toning, etc., I stumbled on this paragraph, and experimented with some ferro-prussiate prints with such agreeable results that I think it worth the while to ask you to recall the paragraph to the attention of your readers. If the process did not cause a darkening of high lights, most noticeable in skies, it would give still better results. Possibly you can give a means of "untanning" or bleaching these parts of a print so treated.

A.—You can clear the whites of these prints with a dilute solution of hydrochloric acid—we think about one dram of the acid in a pint of water will work—but care must be taken not to have it too strong, as it will then bleach the whole print.

Q.—R. C. W. writes: Will you kindly inform me through the columns of the BULLETIN how I can in the best way put the names of subjects on negatives so they will appear in white letters on the albumen print. Such titles are frequently seen on stereos and other prints, and the lettering is made from type?

A.—The matter to appear in white upon a negative should be printed upon thin tissue paper, and this label should be pasted on the negative in a little rectangular space scraped off for the purpose.

Views Caught with the Drop Shutter.

Mr. S. M. DUNBAR, whose experiments in photography have always been very successful, has now succeeded in making good ferrotypes at night, on the new dry ferrotype plates by using a mixture of gun cotton and magnesium powder for lighting, without any preparation in the way of screens, etc. The picture was taken at 9.30 in the evening and had good detail in the shadows.—*Baldwinsville Gazette.*

THE NEW ECLIPSE ALBUM is quite a unique book for holding photographs. It has interchangeable leaves which, by drawing out a single thin wire in the back, can be removed entirely and a new leaf substituted, or the position of the picture in the book changed to suit the taste. It is patented by Felix Riefschneider, of New York, and can be obtained from our publishers.

Mr. E. LONG, of Quincy, Ill., has recently taken his son, Mr. George Long, into partnership, the firm being now E. Long & Son.

THE BLAIR CAMERA CO. has just issued a new catalogue which is divided into three sections. A embraces apparatus of their own manufacture, B that made by other factories, and C apparatus in sets for amateurs. It is well illustrated and worthy of this well-known company.

ACCUSED BY THE CAMERA.

DES MOINES, Ia., July 31st.—Druggist Whitney was "searched" Sunday in a new fashion, under direction of a lawyer. The searchers employed an amateur photographer, who focused his instrument through the druggist's rear window and secured an instantaneous view of a party, all drinking together, in couples and groups. The photographer is likely to have quite a sale for the pictures.—*N. Y. Times.*

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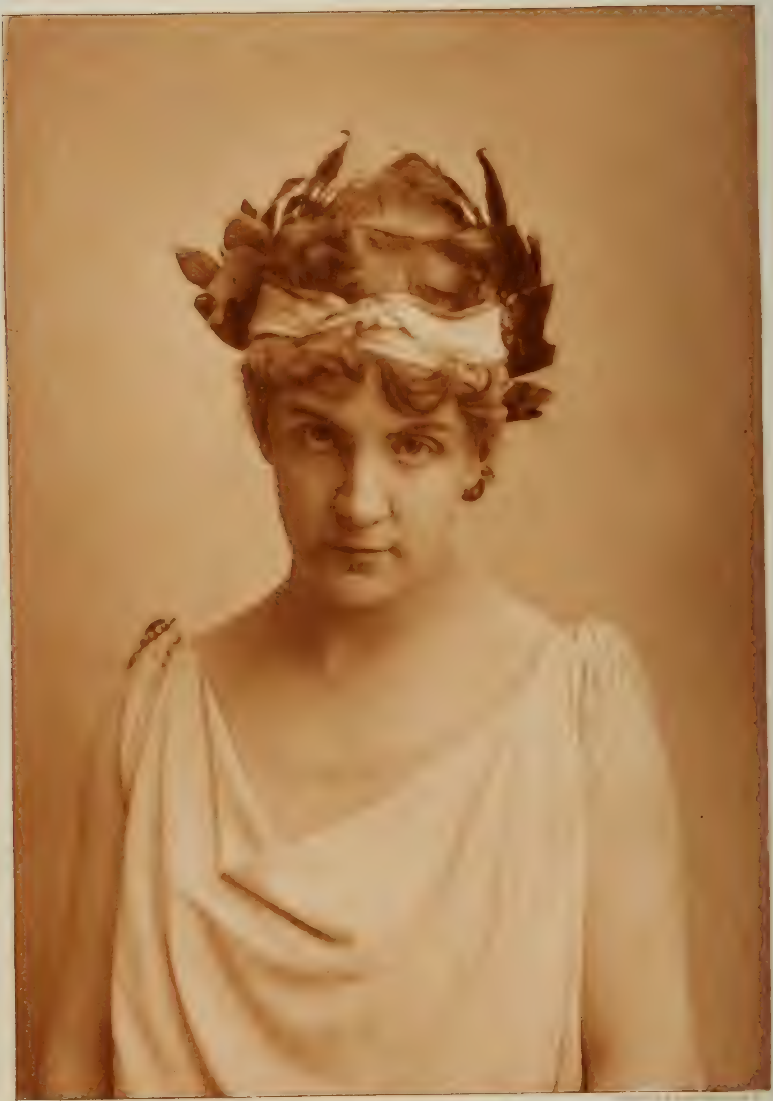

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ANTHONY'S
Photographic Bulletin.

Prof. **CHARLES F. CHANDLER, Ph.D., LL.D.,** *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

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PHOTOGRAPHING AT THE SEASHORE.

THERE are no more fascinating subjects for the camera than scenes upon the seashore, and yet when we look upon many of the pictures of these views we are often disappointed at the results obtained even by those who are otherwise good manipulators of lens and dry plate. The beauty of the various phases of Old Ocean in his multitudinous moods, the ever-changing curves and the marvelous play of color in the dashing waters, as they break in waves and roll as surf upon the white sands, are without doubt most interesting subjects for pictures produced by any method of delineation; but what better means of catching the foaming surges of the deep than the quick eye of the lens and the marvelous sensitiveness of the modern dry plate.

It may not be uninteresting to consider for a short space the various conditions in the manipulation of both of the camera and dry plate in order to secure the best possible results in photography and the production of artistic pictures of seashore views. The subject to be caught upon the dry plate is moving water. In the case of a waterfall we have one kind of motion only, except the breaking spray at the foot of the fall; but in the ocean there is a wonderful variety in the movements of the water. As the rolling waves come in the sand of the shore retards the flow of the water near it, and the mobile mass above glides forward and a beautifully graceful curve is formed by the water after it reaches its greatest height and falls into the foam upon the shore. This is only one phase of the motion of the water upon the seashore, and the speed of this motion, together with the necessary rapidity of the exposer, can be very readily regulated; for the descending water after it has reached its greatest height follows the law of all falling bodies and comes to the earth at the rate of sixteen feet per second. But, in addition to the motion above noted, we have a great number of others, far more rapid, due to the meeting of waves at various angles and the dashing spray thrown into a thousand sparkling pearls in the sunlight. To catch these rapidly moving coruscations of the surf requires the most rapidly moving shutter that is made, as the speed of the movement is probably a hundred or more feet per second. A railroad train travelling sixty miles an hour covers eighty-eight feet a second, while a steamboat at twenty miles an hour only

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covers about thirty feet a second, yet anyone who has attempted to secure good sharp pictures of these moving objects knows very well that an exceedingly quick movement must be given to the exposer in order to obtain good results. From what we have just said it is very evident that to secure perfectly sharp views of the surf on the seashore, an exceedingly rapid motion must be given to the shutter. But, is it necessary to obtain such sharply defined pictures of the seashore to produce artistic effects upon the photographic plates? We think not. The eye does not see each moving jet of foam as it dances in the sunlight, but only catches the surging snowy mass. The slowly moving water and its graceful curves, meet the eye and give the pleasure of their beauty to the observer; but the more rapid movements of the surf produce only a sense of snowy whiteness with cloudlike outlines, whose contour also gives a sense of beauty without the details of the motion of the moving mass. Therefore it appears to us that the most artistic pictures of the surf are those that give the graceful curves of the more slowly moving waters and a real sense of motion in the rapidly foaming surf without the sharper details. Consequently to obtain artistic views of seashore scenes, a moderate speed on the exposer will give better artistic results than one of greater rapidity, which latter will only produce harshness.

Like all views taken for artistic effects, those caught upon the seashore should be obtained either early in the morning or towards evening, in order that the effects of the shadows may have their full value in the picture. Another point to be remembered is the fact that the best results in surf views are obtained when the tide is high and the wind is blowing on shore. Then the billows are highest and the wonderfully beautiful effects of the snowy foam are seen to the best advantage. Furthermore, a picture of the surf alone is seldom interesting; but if the view is taken alongshore and with some boats or a group of people on the sand, the scene becomes much more effective as a picture, is often beautiful and sometimes grand.

A few words about the treatment of plates exposed upon seashore views may not be out of place here. Very few people realize the wonderfully powerful photographic effect of the light from water, and especially from the ocean. In making instantaneous views upon the land, we have quite a number of colors and shades of gray that we desire to secure in effects upon the sensitive plate, but upon the seashore the prevailing color is blue, which is among the most strongly photographic of the rays of the spectrum. The consequence is that generally the plates used at the seashore are over-exposed, owing to the use of too large a diaphragm in the lens. As a rule, with good sunlight and in early morning or towards evening, a rapid rectilinear lens may be used with a medium stop; towards noon this can be reduced at least two sizes, and as good results are obtained. In developing plates used at the seashore, work with a weak developer, that is one diluted with water, and take time at the development. A little patience here will be fully rewarded in the final negative. If bromide is used you cannot get the detail and softness that is obtainable without it. Bromide is useful for pictures taken without excessively rapid exposure and when over-exposed; but for over-exposure, where great speed is used, it is better to dilute the developer and go slowly.

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All communications for the columns of the BULLETIN *should reach us on Monday preceding the day of issue, to insure their publication at that time.*

EDITORIAL NOTES.

We are indebted to our good friends J. G. Ramsey & Co., of Toronto, for reports of the meetings of the Photographers' Association of Canada. The officers for the coming year are: Mr. Staunton, of Toronto (re-elected), *President;* J. Stephens, Barrie, Ont., *First Vice-President;* E. Poole, St. Catharines (re-elected), *Secretary;* A. T. Barraud, Barrie, *Second Vice-President;* S. J. Dixon, Toronto, *Third Vice-President.* The Executive Committee consists of the three vice-presidents. Toronto will be the next place of meeting.

At a recent meeting of the London and Provincial Photographic Association, Mr. A. Haddon had prepared some chlorophyl from the leaves of the pear-tree by extraction with alcohol and purification with ether. The color of the liquid depended upon the thickness of the layer and the amount of chlorophyl in solution; in thin films it was green to the eye, in thicker films brownish red, and in thicker films still red. The green solution showed in the spectroscope a powerful absorption band in the red; when a thicker layer of solution was used another band appeared between the red and green, and most of the blue was cut off; when a still thicker layer was examined, more of the blue was seen to be absorbed and the green band intensified; on increasing the thickness of the layer only red light and a little green was transmitted. Mr. Haddon demonstrated the foregoing points by experiment, and added that Mr. Ives had not stated in his memoirs whether he used pure chlorophyl for ortho-chromatic photography or not; common chlorophyl contained a proportion of wax. The color of chlorophyl depends much upon the age of the leaf; young leaves contain much yellow matter. Chlorophyl passes through the human system without decomposition. He wished that Mr. Ives would state minutely how he makes his chlorophyl, and in what strength of solution he applies it to photographic plates. Mr. W. H. Harrison said that exhaustive chemical and optical researches on the nature of chlorophyl had been made a year or two ago at the laboratory in Kew Gardens by a Manchester scientific chemist, and printed in one of the publications of the Royal Societies. If he remembered rightly, one conclusion of the experimenter was that pure chlorophyl was a glucoside rather than of the nature of a wax.

The Great Lick Telescope on Mount Hamilton is to be provided with a photographic attachment to its thirty-six inch objective. This is expected to give some very valuable results in photographs of the moon, planets, nebulæ and comets. Professor Holden, under whose advice this new attachment is to be made, also believes that in photographing the stars and star clusters the great telescope will find its chief application and demonstrate its immense superiority.

Another large telescope is to be erected at the University of Denver, Colorado, by Mr. H. B. Chamberlin, and will be five thousand feet above the level of the sea, or eight hundred feet higher than the Lick Observatory. The objective will be twenty-six inches; but the increased altitude of the instrument will give it a number of advantages.

Dr. Vogel, in addressing a photographic convention, said: "Some time ago we had in Germany an amateur question. It was asserted that gelatine emulsion favored amateur photography, and that that must ignore the practical photographer. We have observed that we have nothing to fear from the amateurs; on the contrary, we are very much indebted to them. Who invented photography? An amateur, Daguerre. Who is the inventor of the printing process? An amateur, Talbot. Who invented the collodion process? An amateur, Archer. And to whom are we indebted for the gelatine process? To two amateurs, Kennett and Bennett. God bless the amateur. We have a very interesting instance in Germany that amateurs elevate art. Why is Germany the most musical land of the world? Why do you find there music more appreciated than in any other part of the world? Because we have so many musical amateurs."

Herr Charles Srna, of Vienna, writes us that the jury of the exhibition of the Vienna Amateur Photographic Club will consist of W. Bürger, Professor Dr. Eder, Alfred Baron de Liebig, Aug. Chevalier de Lohr, Professor Fritz Lückhart, Dr. Frederico Mallmann, Charles Srna and O. Volkmer.

Mr. A. B. Stebbins, of Canisteo, N. Y., writes us that the next meeting of the Southern Tier Photographers' Association will be held at Suttons, in Hornellsville, on Thursday, August 30th, during the Fair at that place, to give a chance to all visitors to meet with the association. We hope that many members of the fraternity will avail themselves of this opportunity. All will be cordially welcome. It is a good thing to meet together and learn what others are doing; it enlarges the mind and in many cases gives new life to one who thinks that there is nothing else to be found out in photography. Meet often, and read the journals and you will be surprised how much yet remains to be done in the photographic world.

We have been favored with calls from quite a number of our friends lately, among them Mr. W. H. Rau, of Philadelphia; Mr. John Carbutt, of same city; Mr. C. Gentilé, of Chicago, editor of the *Photographic Eye;* Mr. J. V. Stettinius, of Cincinnati, the well-known amateur; Mr. G. Cramer, of St. Louis, who with his wife, sailed on the steamer Aller for Bremen. The latter intend visiting Germany, Switzerland, Italy, Belgium, France and England. Just before sailing a very handsome flower piece was sent to Mrs. Cramer, with the compliments of Mrs. James Landy, wishing all a pleasant voyage and safe return.

The amateurs of Plainfield, N. J., have organized a club, with rooms on Park avenue in that city. The membership numbers twenty-six, with a prospect of an increase to forty, as there are at least that number practicing the art in Plainfield. The well-known architect, Oscar L. Teale, is President, and L. W. Terrell, a prominent electrician, is Vice-President; G. Harry Squires, is Secretary, and William H. Lyon, Treasurer. Many of Plainfield's prominent resitdents are on the club's roll. A fine large room has been rented and is being neatly decorated and provided with a commodious dark room, containing all modern improvements. Mr. C. H. Davis, the Chairman of the House Committee, who attended the Photographer's Association of America at Minneapolis, secured, while there, a large number of fine specimen photographs for decorating the rooms. The club starts with every augury of success.

The Commissioners of the Art's Department of the Charchoff Museum, Moscow, Russia, have decided to open a photographic department at the Museum, where the work of photographers and amateurs is to be exhibited. An exhibition of photographs, photographic instruments, material, etc., is to be opened this autumn. Further particulars to be shortly made public.

We have received quite a number of pictures from various friends, which we shall notice in the next Bulletin. We now acknowledge the receipt of those from Fritz, of Lambertville; A. J. Keyser, of Belle Plains, La.; J. B. Lawrence, Moriches; H. R. Ross, of Battle Creek; and E. J. Foss, of Malden. Our pages are so crowded with society reports that we have not space in this issue to notice them.

We have to thank the editor of the *Photographic Times* for a very complimentary review of the "International Annual;" we are sorry that lack of space prevents our reproducing it entire. Elsewhere we make extracts for the information of our readers.

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

The Phosphorescent Appearance of Dry Plates in the Alum Bath.—The latest about the Hydroquinone Developer.—New Objectives.—New Amateur Societies.

A good deal has already been written about the phosphorescent appearance of dry plates in the alum bath. This appearance is disturbing, because it produces the so-called gray fog, and the discovery of its cause is therefore important. Messrs. Lenard and Schultz have published lately some interesting observations about this. "The cause of the phosphorescent light is, according to their assertions, not the photographic film itself (as supposed by Chandler), but it takes place when mixing a saturated alum solution with a suitable pyro-developer. Take 100 parts of water, 4 of potassium hydrate, 0.75 sulphite of soda, 0.1 pyro; instead of potassium its equivalent of soda or bicarbonate of soda, and instead of alum pure sulphate of aluminium may be taken. Equal volumes of developer and of alum solution are applied. The condition is, that the developer contains absorbed oxygen; it must therefore be well shaken before adding the alum, as it consumes quickly all the absorbent oxygen when standing quietly. Heating is favorable to the appearance. We have shown that the pyro condenses upon the alumina precipitated from the alum mixture, and that it oxidizes quickly with phosphorescent light. The sulphite of soda preserves only the oxygen in the developer unconsumed; it is peculiar that a mixture of pyro and potash and sulphite of soda consumes oxygen with less rapidity than pyro and potash alone."

The phosphorescent light is photographically without action at a distance of 1 to 2 m.m. Lenard & Schultz at least obtained no effect after testing ten times upon the same place with a highly sensitive orthochromatic plate—a dish with a plaster of Paris bottom having been fastened upon the plate and the phosphorescence was effected therein. On the other hand, every plate placed into the alum bath, after developing with the potassium developer, becomes darker and shows a denser silver texture under the microscope than a slowly washed plate. The phosphorescent light will, therefore, cause very likely the gray fogging of the film in the alum bath.

The alum bath removes otherwise the yellow fog, while continued washing will perform this only very incompletely. It is very probable that the removal of the pyro remaining in the gelatine by alum, is due, to a great extent, to the condensation of the pyro upon the alumina; alumina being only precipitated in the alum bath by the residue of the developer in the plate, the pyro condensed, and the alumina is then dissolved again by the excess of alum. The pyro, now, does not adhere any more to the gelatine, because this has become tanned.

To judge from these observations, it might appear expedient not to place the plates developed with pyro into the alum bath before a thorough washing.

It would be important to know whether the phosphorescent appearance also takes place with hydroquinone. The hydroquinone developer has become very popular here lately, and seems to displace the pyro developer. The formula which I apply, I gave you some three months ago. The most astonishing thing of this developer is, that over-exposures can hardly take place. My son exposed a plate for one second, another one, one hundred and seventy seconds, and developed both plates with the same hydroquinone developer at the same time. The second plate, of course, appeared much quicker than the first one. He took it out sooner, but both plates were equally good. Portrait photographers ignored this developer in the beginning, but now they seem to favor it. Mr. Battin, operator of Messrs. Selle & Kuntze, writes to me about it:

"The essential perfection which the hydroquinone developer has experienced lately—to produce a durable solution that will keep—made me try some experiments at the studio of Messrs. Selle & Kuntze with the following results:

It is not necessary to apply hot or distilled water for the developer. Common water from the pipe does good service and effects only sometimes a faintly brownish or reddish coloration of the solution, which is not in the least disturbing.

After several tests the following formula has proved to be quite excellent:

Add 5 grams hydroquinone to 900 grams of water and dissolve completely by shaking. Then add 40 grams sulphite of soda and dissolve the same way, and the same is finally done with 75 grams potash. The developer is now ready and keeps clear even without closing the bottle. When the potash is added a heating of the solution will take place.

This developer, which contains only about ½ per cent. hydroquinone acts more energetically than the oxalate developer with hypo addition in preliminary bath, and is much more convenient in its application.

If the developer is prepared in the same way with only half the quantity of water, it will develop slow and flat and has to be diluted to obtain good results. Addition of bromide of potassium acts the same way as in the oxalate developer, and a small quantity of ammonia will accelerate the action.

If plates are used which fog easily and require a tanning bath after developing and before fixing, alum is not applicable, because it forms a precipitate with the hydroquinone-developer, which will spoil the plates sometimes, but a weak tanning solution seems to be of service in this case."

It might be remarked yet that the hydroquinone developer in this form, containing only ½ per cent. of hydroquinone, is not much dearer than the oxalate developer, but becomes much cheaper, as a considerable number of plates can be developed in the same solution.

Some weeks ago I reported to you about a new objective construction, and again I hear about new discoveries in the optical field. It seems that they work here now with high pressure steam. Two young talented scientists of the imperial physical college have been sent to Steinheil and Voigtlander to support them in new objective constructions from the new optical glass, which is being melted at Jena.

One of the most disagreeable defects in lenses is the astigmatism, which can only be removed by small diaphragms. This defect is based upon the fact, that of rays falling diagonally upon the objective, like those of the head or foot of the sitter, only those are correctly refracted, which to the right and left lay symmetrical to a vertical plane, which is laid through the axis of the objective, but not the other rays, which strike the objective above and below. According to the astronomer Miethe (the partner of Gaedicke), the calculation shows "that such a defect, hindering the equal distribution of sharpness by a suitable selection of the glasses, as furnished by the Jena glass factory, can be considerably reduced or relatively removed entirely without disadvantage, even in a symmetrical objective."

The samples made in the workshop of Professor Hartnack at Potsdam have completely and practically confirmed this. It is therefore to be expected that it will be possible shortly to produce an objective of aplanatic construction, which is capable to furnish with an opening of $\frac{1}{6}._{5}$ c.m., a very extended picture circle of such even sharpness, as could be obtained heretofore only by application of very small diaphragms.

Some technical difficulties have delayed yet the practical execution of the results of calculation obtained already last March.

The amateur business increases here rapidly. In Stockholm there will be published a new journal for photographers and amateurs in the Swedish language and on the day of the anniversary of the "Deutsche Gesellschaft von Freunden der Photographie," a new society, the "Associazione degli Amatori di Fotografia in Roma," (address via in Lucina 10), has been formed with the Duke de Artalia Antonio Ruffo as presiding officer.

The German Amateur Society has increased from 25 to 140 members since the first year of its existence.

Berlin, July, 1888.

THE PICTURES AT MINNEAPOLIS.

Second Notice.

Appleton, of Dayton, Ohio, had an uncommonly fine exhibit, and it was hard to decide upon the best pictures, they were all so good. The *genre* pictures were particularly fine. "The Courtship" was a charming study and well carried out. "The Finishing Touch" was also excellent. "The Confidents" and "Guess Who" were also master-pieces of this kind of work. We are sorry our space will not allow us to give details, and any short description of the pictures would be unworthy of them, they should be seen to be appreciated.

Dabbs, of Pittsburgh, had an exhibit that was full of the finest photographic work, artistic, carefully lighted, graceful posing and finely executed in every way. The large portraits were notable for their life-like posing; the full figures for the ease and graceful positions of the figures and the excellent study to obtain artistic effects in light and shade. One picture in the exhibit, a laughing girl with a bonnet on, was a gem of photographic art. The 10 x 12 and smaller pictures were equally as good as the large ones, showing that Mr. Dabbs is careful to excel even in small work. As usual, this artist stands among the first in the fine effects obtained with draperies, every picture with these being wonderfully well caught and full of study in the fine details of the fabrics, a point that seems to be particularly characteristic of this well-known Pittsburgh photographer.

J. E. Hale, of Seneca Falls, N. Y., had some large portrait heads that were very good, and some fine examples in cabinet work.

Stout, of Unionville, Mo., showed a number of cabinets of children that were examples of artistic posing, but we think the lighting was a little too strong and made the pictures hard.

Dittmar & Burritty, of Kenosha, Wis., exhibited a number of good cabinets.

Landy, of Cincinnati, as usual, had a fine exhibit. The rich brown tones in the style of Mueller, of Munich, were a very pleasing feature of this exhibit. It is needless to say that the whole of the exhibit was in good artistic taste and worthy of this well-known and honored photographer. A medallion head in the exhibit was a perfect gem of photographic art and had a large crowd of admirers.

H. Mc Michael, of Buffalo, exhibited a number of his more recent achievements, all of which show steady progress in the highest phases of artistic photography. "Happy Days," groups of children at play, was a charming study. "Five o'clock Tea," a number of studies of interiors, groups of ladies at afternoon tea, were some of the most perfect pictures of the kind we have ever seen, full of artistic feeling and fine photographic skill. In this exhibit were a number of large studies. "The Storm," a head of King Leah in the tempest, should be seen to be appreciated, the effect of the wind in the hair and beard being remarkably fine. A half-length figure of "Diana" was also very good. "A Knight of King Charles" showed fine effects in costume. A "Portrait" was also a good study after the old masters. "Virginius" and "La Belle Bretonne" were yet other gems of study in this unusual fine exhibit. True to the best interests of fine photography, the pictures were mounted on plain white cards without any embellishment, and showed only the photographic effects, all of which told of the influence of a master hand.

Carl Thiel, of Duluth, Minn., had an exhibit of excellent cabinets, with a few larger pictures, all of which were very good. The pictures of children were especially attractive and artistic.

J. A. Brush, of Minneapolis, had two frames of cabinets that were very good in every particular. We should be glad to see some of the larger work of this artist; but a fire in his studio prevented his making a more important exhibit. We must congratulate him upon his fine cabinet work, and the enterprise shown in making an exhibit under the circumstances.

Mellen, of Colorado Springs, had a number of large and fine views of Western scenery. The pictures were uncommonly fine, but we could not admire the prints, they were rather leaden in color.

Lorrin E. Miller, of Alliance, O., had a frame of six excellent cabinets, and a couple of large pictures. These latter were very good indeed; one was a laughing girl, full of life and an excellent picture, the other was a monk at a door, a capital study in every respect.

S. Roggenburger, of Philadelphia, showed a number of humorous pictures taken with the flash-light. They were quite good.

Marshall Brothers, of Cazcnovia, N. Y., had a number of large and fine portraits that were excellent in every way; the cabinets were also very good. In this exhibit we found a number of interesting studies, "A Pair of Forgers," two men working at an anvil; "The Artful Dodger and Fagin" *a la* Dickens, were excellently done and full of interest.

Bowersox, of Dayton, O., had a number of fine interiors on 14 x 17 plates. They were very good indeed, and showed unusually careful photographic work.

George Barker, of Niagara Falls, showed a number of interiors of Southern hotels, principally the Ponce de Leon at St. Augustine. They were all finely done.

O'Keefe, of Fort Madison, Ia., had a number of bromide enlargements and an excellent exhibit of fine cabinets.

Harman and Verner, Bay City, Mich., had an exhibit that was good in posing and general artistic effects, but the lighting was too strong.

J. M. Jordan, of Philadelphia, had a number of bromide enlargements, that we have already noticed in another place. The most characteristic thing about them was their softness and the beauty of the details, combined with clear, clean, high lights.

O. P. Scott, of Chicago, had six life-size heads that were admired by all who saw them. They were exceedingly life-like in pose, well lighted, and generally an uncommonly fine set of portraits.

G. E. Curtis, of Niagara Falls, N. Y., had a number of views of the great waterfall in both summer and winter aspects. They were remarkably soft and fine pictures in every way.

C. H. Stoddart, had six large pictures of Indian groups that were very interesting and lifelike. They showed the characteristic poses and groupings of the Indian in a very striking manner, and were much admired for their truthfulness to nature.

In our next issue we shall have something to say about the Foreign exhibits.

PHOTOGRAPHIC OBJECTIVES—FACTS AND FALLACIES REGARDING THEM.

BY EDWARD BAUSCH.

[Read before the Minneapolis Convention.]

(*Continued.*)

To attempt to correct any one of these qualities will disturb the others; not only that they are often to such an extent antagonistic that to improve one will considerably augment another fault. This is not within the province of this paper to show you what the likely changes would be which would be followed to improve the objective, but I can indicate what some of the results would be which arise. For instance, if the visual and chemical foci do not coincide, it is evident that the objective is chromatically over or under corrected, and if the objective would otherwise give a good image, the inner or cemented surfaces would probably be changed; this might very naturally affect the focal length, which in a telescope objective would hardly be noticed. The focus of the lens might easily be doubled before the proper correction would be reached, and changes would again be necessary to bring the focus to the proper distance, which would again disturb the chromatic correction as well as perhaps the spherical, which latter designates the amount of curvature of the image. Thus a change of $\frac{1}{16}$ of an inch in the radius of one of the inner surfaces, which would hardly be noticed in an ordinary lens, might lengthen or shorten the focus of a photographic objective several inches. The changes which sometimes occur are often surprising and inexplicable even to one who is accustomed to them. It may be found that the amount of spherical aberration is so great that no amount of changing will bring it to the proper standard. One means of partially overcoming it would be the decrease in the size of the lens, which would mean that they will admit less light and consequently be slower. The thickness of the lens which causes the distortion must be accurately determined. However, we will assume that the various corrections are finally combined as far as possible, and the skill of the optician must determine to what extent they will be. It may be impossible to combine the spherical and chromatic aberrations sufficiently to make the former acceptable, and a new series of experiments will have to be undertaken, based on a combination of new glass.

After a lens is completed which meets the ideal of the optician, it may be said, "We can understand that the first lens has involved a great amount of work, but after the completion of the sample none of these difficulties will arise." To a certain extent this is true, but it must be remembered that the optician's work is almost entirely empirical. Each lens is an experiment; there is an individuality in each which cannot be overlooked. A lens is rarely if ever perfect when completed, and each one is a special study. There are certain features which rarely if ever change when working under the same formula and using the same glass, such as coincidence of visual and chemical foci, centering, and size, but others, such as homogenity and refrangibility of glass, sphericity of surfaces, length of focus are variable, and often can only be reached after repeated trials and in many instances cannot be obtained at all.

There is one point which I have not yet touched, and which is of the utmost importance, and that is the sphericity of surface.

To simply grind and polish a lens is exceedingly simple, to do so and obtain spherical surfaces is extremely difficult. Instead of spherical, a surface may be and often consists of a series of elevations and depressions.

They may be in the shape of rings or may be confined to spots, or may radiate from the center, in which way I have seen them as pronounced as the spokes in a wheel. Heat, even when moderate, when applied to a certain portion of the lens, causes the same effect. There are optical tests by which we can easily see the expansion of the glass after the finger has been allowed to rest upon it for a moment. The same effect may be obtained by fixing the lens in the mounting. I have often examined lenses which were so distorted by the pressure exerted on them in the mounting that it seemed almost impossible that they could form even a fair image.

What is the effect when these conditions exist? First of all, a lack of sharpness over the plate, and then depth of focus.

An elevation, say on a convex surface will give a shorter focus than the focal point for the entire surface, for all those rays which fall upon it because of its short radius, whereas a depression will cause a longer focus, so that instead of all the rays combining in one point there are a series of focal points.

When depth of focus is caused by reason of this fault it is to be condemned, because it is at the sacrifice of definition, and any lens possessing it cannot be rated as good. Depth of focus, when caused in this manner, is one of the qualities which can be determined without comparative tests, and every lens purchased should be tested to this end. A good means to determine the proper correction of the surfaces is by the use of a diaphragm. Focus for a sharp image on the ground-glass by means of a magnifier with a full opening of the lens, and note this point in a camera. Then rack out of focus and insert a diaphragm sufficiently large that the image can just be distinguished, and again focus by means of the magnifier. If the objective is perfectly correct, this point will coincide with the first, and if not, it is, as stated before, a serious fault, because there will be a different focus for each diaphragm.

Depth of focus and speed are incompatible, inasmuch as both qualities depend on the aperture of lenses, assuming, of course, a relatively large diaphragm and focal length; while the former decreases with the increase in the aperture, the latter increases.

Depth of focus is, no doubt, a very desirable quality, but to obtain it isn't a legitimate way with high speed—is simply impossible.

In two lenses of similar construction, of the same diameter and focus, it will be exactly similar, and the ratio of depth will increase with the decrease of the diaphragm. In view lenses depth of focus can almost always be obtained by the use of diaphragms, and this is also true in an objective especially made for portraiture, but in these the same is obtained by placing two systems further apart or varying the distance of the individual lenses, which means nothing more or less than the production of spherical aberrations.

The extent of flatness of field and distortion in lenses are variable qualities, and although depending to a certain extent on the diameter of lenses to a greater or less degree on one or the other lens, according to the amount of skill and care of the optician.

The tendency, almost since the first use of lenses, has been the increase of speed, and consequent increase of aperture of lenses, and although the advance has been and is slow to the uninitiated, it seems an enormous amount of work to the optician.

Every degree of increase represents a considerable outlay of material and manual labor, and can only be maintained by correspondingly greater attentions to the minutiæ of work. Each individual reproduction is to him a source of pride, and he works with love and ardor over every step of his work. Outside of this, however, he is fully aware of the detrimental influence of imperfect work and his ambition is not only to accomplish the highest results, but to maintain it after it has been reached.

The actual work of grinding and polishing is comparatively trifling, as is shown in the cheaper form of lenses where the cost of the glass is just as high, or wherein the lenses are used, whether good or bad, unless they have faults easily noticed. The time-consuming and worrying work is that of continually testing and correcting the lenses. When we remember that the best, although none too good, involves the amount of work I have endeavored to portray, you will no doubt feel that the optician does not ask too much remuneration for it.

Now, as to homegenity of glass. A disk should be of the same consistency throughout; when it is not, it possesses either impurities or air bubbles which are usually easily seem, or so-called striæ, which are not so discernable, but of greater importance. These are caused by the unequal consistency of the glass or unequal annealing, and have a similar appearance to a glass of water when strong sugar is poured into it and is not well mixed, or heated air as it arises from a stove or hot ground. All glass not specially made for optical purposes has them, as can be easily seen by looking through it edgewise, even in the best plate. Of course no disk is used which shows them or air-bubbles or impurities on a preliminary examination; they often appear before the lenses are completed and work then ceases, but very often they cannot be detected until the lenses are finished. Air-bubbles can easily be seen by any person, and when they exist the optician must judge whether they are sufficient to impair the salability of the lens.

If, however, a man who has a reputation to guard, permits it to pass, and I would add it is as hurtful to his eye as to any persons, then the purchaser should not be hasty to condemn it, for it then usually possesses merits which far outweigh this disadvantage. Take for instance an air-bubble as large as a pinhead in an ordinary size lens. Its area is so infinitisimally small as compared with the area of the lens that it is of no account whatever, and does not affect the lens in the least. Although it may sound strange, I would for my part select a lens containing an air-bubble in preference to one without it, provided they were from one reliable firm.

Striæ, however, which it is difficult to detect, are positively injurious when existing to any extent, inasmuch as they refract the rays passing through them in different directions, thus preventing them from combining to form an image, and they may sometimes cause a false light. They often pervade an entire lens and occasionally can be seen with the naked eye, but as a rule, not. An easy method of looking for the most glaring is as follows: Unscrew the system and examine each separately. Place one in the camera or on the table in an upright position, and back of it at any distance a lamp or gas jet. Look for the focal point by means of a white paper and get the eye in the same position, which can be easily done after a little practice.

The lens will be found brilliantly illuminated, and the striæ will stand out as dark shadows. When a few small knife-edge threads show, they are of little moment, but when in a circle of light there is a wavy appearance it is generally indicative of other striæ, which are injurious, but cannot be determined in this manner.

I have shown how some of the faults may be determined by almost any person, but others, such as definition, distortion, amount of speed, can only be judged by a comparative test or by a person of wide experience. Comparing a lens with one of known excellence is the only reliable manner, but then the following points, among which I recapitulate those already mentioned, should be observed. Determine coincidence of visual and chemical foci; determine coincidence of ground-glass and plate in plate-holder. Use flat plates when ground-glass is flat; if this is not flat use plates corresponding with it. Determine spherical correction by means of diaphragms.

The two lenses should be for the same size plate, and of about the same aperture and focus. Lenses should always be tested first with full aperture or large stops of the same size, as small stops correct spherical aberrations in good lenses as well as poor ones. If desired, they can be done with small stops later on. Make comparisons under the same conditions of light.

For spherical aberration focus of printed matter fastened to a screen or on a map, and have the lens square with the objective and within two or three times the equivalent focus of the lenses, as they are then under the most strained conditions.

For depth of focus also stationary objects, which have thickness or a view. Always focus the lens on the same point, and never make a comparison without the use of a magnifier or focussing glass for focussing as well as for examining the negative. Last, but most important, make the comparison in the spirit of arriving at the truth, and do not permit your judgment to be biassed or inflenced by your feelings.

DARK ROOM PRACTICE.

[Read before the Minneapolis Convention.]

Our esteemed President bestowed the honor upon me to invite me to write a paper on our dark room practice, only some "practical bits" as he called them, in order to have some questions asked and discussion had on it. I feel very honored indeed of the distinction, but I do not feel myself up to the requirement, and especially in an assembly of so many of our illustrious brethren, who have won a world-wide reputation in the craft. Our President's wish is an order, though, for me, and I will try my best to relate some practical observations of my own, without guaranteeing them to be strictly in accord with chemical law, for I do not pretend to be a chemist.

Our President wants me speak about our dark room manipulations. I will therefore strictly adhere to his wish, and ventilate the dark room. Ventilation is indeed the very first item to discuss, for it means health. With the advent of dry plates, though, this question is brought back to a second degree of importance, except where still the wet process is used for copying purposes, or tin-types are made; for we do not stay very long in the dark room and we have no more poisons like cyanide and others to deal with and to undermine our health.

It is good policy, though, where room and situation admits it to use any kind of ventilator which will close out white light and let come in some fresh air, especially on hot summer days. If constrained by space and situation, leaving open the door of the dark room when not in use settles this part of the question.

The light in the dark room is then the first vital question. I believe in plenty of it, provided it is non-actinic enough to allow handling the plate with impunity of fog. I condemn entirely the source of daylight for illuminating a dark room for its changeability, at all hours of the day, just as well as a lantern light inside the dark room, though the lantern has the advantage over the first, to give a steady light, which enables the operator to become soon expert in judging the intensity of the negative, but it has the enormous drawback of its insupportable heat in summer, beside the smoke and smell, at any season injurious to the health, whatever light you may use. I am strongly in favor of artificial light of any description provided it is fixed outside the dark room, better so, if you can manage it from the inside according to the amount of light you are in need of. A gas-jet or coal-oil lamp fixed far enough from the dark room window not to break the glass by heat, will answer the purpose.

Ruby glass or paper, although injurious to the eye, is still the safest (if we are bound by the space to work close to it), according to my practice; but considering that the light increases or dimishes in the ratio of the square of the distance, by going further away from the light we might use a light less safe than ruby, for instance, orange, yellow or cathedral green. I prefer one, two or all three of the latter combined, according to the size of light and dark room.

With the very sensitive plates of our days, I find it necessary to begin developing away from the light, or to screen the light down by a cambric curtain of orange color, and as soon as the image appears I admit more light to fully ascertain the progress of the latent image. The very start of the latent image enables the observing operator to judge the amount of exposure. If right or wrong, too much attention cannot be paid to the coming negative. On this very first care or carelessness depends entirely the quality of the future picture. The proverb, "Better late than never," is entirely inapplicable here, and must be kept in mind as altogether out of place. It is, according to my notion, impossible to give the effect to a negative by any known "after treatment" which you can give to it by judicious developing.

To ascertain the right exposure of a plate, I find it a good practice to start with the formula found to answer the best for a rightly exposed plate. This seems to me a practical guide to recognize the amount of exposure received, and can easily be modified to the want of the effect sought for, for an over-exposed plate can be developed to yield the effect of an under-exposed plate, by starting with too much pyro or bromide in the development, or *vice versa*, and if ignorant or careless in mixing the components of the developer, might deceive you in the treatment of the negative.

A good dark room man must, of course, understand how to develop a plate without any knowledge of exposure received ; I would even say without the use of any scale to weigh his ingredients, but I will only speak of our every-day practice. I believe strongly in slow developing, viz.: rather weak developer, for many reasons.

Should the negative show signs of under-exposure we are in the very best way, for it is generally known that a diluted developer precipitates the bromide of silver acted upon by light in a finer state of metallic silver, which forms the latent image, and insures a good range of half tones, softness and roundness with the atmosphere effect, the developer penetrates slowly but gradually, and forms the picture deeply in the film, which gives bright and sparkling negatives. It is a known fact that cold solutions act slower than warm ones. Heat can therefore safely be considered an accelerator. This reason holds good with under-exposed plates. In an under-exposed plate, as everybody knows, the shadows are tardy to respond to the action of the developer. Therefore, by applying heat to them, we are able to bring as much out of them as the light fallen upon them gave impression before the sensitive film. This is found very practicable by simply breathing upon parts of the negative with surprising success. Another way equally good is to throw the solution from the developing tray into the graduate, and pouring it gradually back upon the plate over the part that you wish to give more intensity and detail.

To produce a good negative in every respect, we must have patience, and not condemn a plate because it develops slowly, for the more sensitive a plate is the slower it has to be developed. A slow plate stands a stronger developer. I think it is wrong to say a good plate has to be fully developed in three minutes. No time can be laid down as a rule to produce a good negative. Before exposing a plate a good photographer takes all the time he needs to study his sitter, to find out the best outlines of the face, pose and light to suit the subject, in order to obtain a perfect picture. Give your dark room man the same chance of study and success by giving him time. Do not rush him through by saying, as I have heard so many times, "My best pictures came out like a flash and were developed in three minutes," for the statement, if true, was an exceptional one, and cannot be applied to every negative and every subject, although it is a fact that a plate which has received an exact exposure takes less time to be developed than a plate which needs doctoring. If the exposure were right, you have nothing lost by slowly developing. You have the pleasure of seeing your negative building up with sparkling effect. Should the exposure have been a too prolonged one, you are again in the only safe way to save the negative from spoiling, for you have plenty of time to modify your developer to suit the exposure, without any danger that your plate will have developed too far during that time. I say therefore, "Go on slowly." "Chi va piano, va sano e chi va sano, va lontano." (Who goes slowly, goes safely, and, who goes safely, goes far), says an Italian proverb, which cannot be better employed than in developing.

A strong developer precipitates the bromide of silver, disturbed, if I dare say so, by the action of light in a coarse grain. The picture flashes out, the developer does not penetrate the film, and though the negative looks quite dense, we are quite astonished to find that after fixing a flat and thin-looking negative, the depth of tone in the negative is lost. It is exactly the same way as in toning prints very quickly with a good deal of gold, when the gold did not penetrate, and stood only on the surface of the picture. Though the print looks quite blue it changes to a disagreeable red in the fixing solution, and proves only that we are deceived. I know I will raise a good deal of contradiction among our brethern, and perhaps more from the plate manufacturers themselves with the following statement: I do not believe much in the virtue of restraining an over-exposed plate with old developer, or in the use of it to replace the bromide. My practice has taught me that the use of old developer gives, of course, more intensity and makes developing slower, but at the expense of cleanness of the shadows. To ascertain the truth of my assertion, I beg you only to give the matter a comparative trial by cutting a plate in two and developing one-half with a mixture of old and fresh developer, and the other half with a little more pyro and bromide in the new developer. I am convinced you will decide in favor of my statement. You will find, in the latter case, beautiful clearness and definition in the shadows, with purer high lights in comparison with the first half. Softness and gradation, from the high lights to the deepest shadows, are considered a fine chemical quality in a negative, and with reason, for the effect adds so much to the beauty of the finished picture.

I found no difficulty in getting the said effect by stopping developing a trifle sooner than I would consider fully developed, and without draining, putting the plate in a tray of water merely to cool the plate before washing, or wash the plate under the tap with a gentle, slow, stream of water. In both cases, the developer being very much diluted or washed out gradually, the dilute developer in the film will continue its action as long as an atom of it is in the film, and by the same law and effect of diluted developer, will act with benefit on the shadows, and form those so highly praised half tones and gradation in light and shade. You will easily recognize by this method the difference gained in intensity, and the beautiful effect obtained after the plate is fixed.

The temperature of the chemicals too merits our attention, and a good operator will always look out that his stock solutions do not freeze in winter, and his developer not get too warm in the tray in summer. Frequent change of temperature acts destructively on solutions, therefore, it is well to keep the developing bottles where frost cannot reach them in winter. Should the dark room not be kept warm, it is easy to keep them well enveloped and covered in straw. To prevent frequent change of temperature I do not advocate keeping developing solution on ice in summer unless it can be done night and day, but I prefer to dilute my developer, before use, with ice water, and, if possible, put a piece of ice in the developing tray to keep the developer from getting warm by the imprisoned warm atmosphere of the dark room. At the last year's Convention in Chicago, our esteemed President, Mr. G. Cramer, gave you a description of how to get rid of frilling in summer, and insuring a perfectly hard film, not easily scratched, even with the finger nails, and standing a washing of twenty-four hours and more. This was and is exactly my practice for many years, which I can recommend to the fraternity with much assurance of success. The enormous amount of alum in the hypo may not be in accordance with the chemical laws, but I am strongly convinced of its practical value.

Remains yet the question of reducing and strengthening. The safest way to reduce a negative, that I know of, is, undoubtedly, hypo and ferricyanide of potassium. Any local reducing can be done, with equally good result, with a soft brush; by washing at the tap after each application, we insure evenness and local reduction. Much has been said and written about strengthening. There are thousands of formulas, and, without doubt, all good in skillful hands, but the simplest, it seems to me, is the one with bichloride of mercury mixed with bromide of potassium, and fixed with sulphite of sodium, instead of aqua ammonia. Stronger ammonia imparts to the negative an unpleasant brown-yellowish color, which injures a good deal of its printing quality. Sulphite of sodium does not change the color of the negative at all, is more stable and less injurious than ammonia, and therefore preferable. But the negative has to be removed as soon as fixing is complete, otherwise, the sulphite of sodium will reduce again the intensity of the negative. This intensifier has the advantage to intensify more the high light than the shadows, in the proportion of bromide used. A good way to strengthen a flat-looking negative is, I found, to first reduce the negative with ferricyanide of potassium and hypo, as above described, and then strengthen, as said, further up. If only moderate strengthening is required, drying the negative by heat is a handy intensifier; but you must not put the negative too near the stove and melt the film, as it happened to me once last year at F. W. Guerin's.

IN UNION THERE IS STRENGTH.

BY C. GENTILE.

[Read before the Minneapolis Convention.]

How better can the fact be demonstrated that in union there is strength than by the intelligent assembly now before us? There seems to be so little unity among photographers that it is a glorious sight to see gathered before us a number of ladies and gentlemen such as we now meet. Throughout the country, those of us who travel around, well-nigh in every city, know that there are to be met croakers who are continually preaching that our association will not hold together for any great length of time. Let us hope that such prognostications will prove to be without foundation. To-day the photographic business, throughout the world we may as well say, would not be in the precarious condition it is were photographers to act more in concert in conducting their business for their own mutual benefit. Instead, as a rule, they stand more disunited than ever. In every branch of business to-day we see that "trusts" or union leagues are formed in order to make powerful combinations for the purpose of keeping up prices. If photographers cannot form a league to keep up prices, at least they might try to unite for mutual improvement, mentally and socially, and it is to be hoped that such may be the case from meetings like the present. It is to be regretted, however, that they present so small a number of those interested in photography, since there must now be over one hundred thousand people connected with the profession, directly or indirectly, in the United States.

To illustrate what a weak bond of unity there is among photographers, we have only to call attention to the fact that a recent attempt to draw together an international convention of photographers, which was to be held at Brussels, Belgium, after two years' hard labor and a promulgation of some very extraordinary literature, the whole thing has collapsed most dismally, showing conclusively that there is not sufficient of what the French call *esprit de corps* among the followers of our profession, to put themselves to much inconvenience and expense, to endeavor to come to an unanimity of opinion on the many subjects of vast importance to the welfare of photographers and photography.

It is to be hoped that the deliberations of this assembly may have a tendency to make the bonds of unity among the fraternity more binding, and that our confreres may realize that the stronger we are in numbers, the greater will be our influence for good. If we are to ask concessions from fire insurance companies, or favors from railroad companies or hotels, the reasonableness and weight of our argument would be greatly increased and our influence with them correspondingly strengthened if our association numbered thousands instead of hundreds. Therefore, the advantages to be derived from unity are manifold. How much better it would be for all if we were more unanimous in making an exhibit. There is everything to be gained by unity of action, as will be demonstrated to you at this Convention.

It is sincerely to be hoped that these annual reunions may tend, eventually, toward binding us together in stronger bonds than have hitherto existed among the followers of photography. It is to the advantage of all concerned in the profession of photography to see that everything is done to encourage our association and increase its numbers. By meeting together in friendly discourse our views of humanity are broadened and we become more enlightened; therefore,we should all be believers in the motto, "In union there is strength."

TRANSFEROTYPE PAPER.

By H. S. Bellsmith, *Rochester, N. Y.*

[Abstract of Paper read before the Minneapolis Convention.]

Prints can be made either contact or enlargement by artificial or day light, and should be developed with oxalate and iron developer and treated in precisely the same manner as bromide paper. The same formula being used for the developer, clearing solution and fixing bath. After the print is washed in say five or six changes of water (in warm weather ice water is necessary), the print may then be transferred to any surface that will resist the action of hot water, the method of procedure being as follows: Take a sheet of porcelain, plain glass or such material as it is desired to transfer the picture to, and after washing thoroughly, and while wet, place the print (which must also be wet) face down and squeegee in contact. Remove as much of the moisture as possible by wiping the squeegee on a cloth between strokes, then place under pressure with a piece of blotting-paper next to the print. After thirty minutes it will be ready to strip, but may be allowed to dry thoroughly and will strip with just as much ease, the only difference being that the water must be hotter when the print is dry. Take the plate containing the print and put into a dish containing water at a temperature of 110 degrees Fahrenheit when the print is wet, and 120 when dry; allow it to soak about two minutes and then with a pin pick up one corner of the paper, being careful to avoid touching the film. If the water is of proper temperature the paper will separate readily, and can be removed with ease and certainty and without any injury to the picture, which it leaves on the plate. In case the paper does not strip easily, add hotter water. After removing the paper take a tuft of cotton and dip into the warm water, wash the surface of the picture carefully to remove any remaining substratum. The plate should then be put into an alum bath for a minute or two, then rinsed under a faucet and after passing the squeegee over the print very lightly to remove the surplus water, put into a rack to dry.

THE DISPLAY OF APPARATUS AT MINNEAPOLIS.

Second Notice.

The Acme Burnisher Company had a very fine display of their instruments, with the newest devices for heating, both with kerosene and gas. Some large machines, for twenty-one and twenty-six inch rollers, were very handsomely finished and fine pieces of mechanism.

In the way of accessories Bryant, of La Porte, Indiana, had by far the largest exhibit and some excellent examples of his work. On a rolling screen he had fifty backgrounds arranged so as to be readily displayed. Among these the snow scenes were particularly good, also views in conservatories and greenhouses filled with tropical and other plants; and the woodland scenes were also excellently well done. Among the novelties we noted a large balloon that could be used with good effect in some humorous poses. Taken altogether, the display was a fine one and spoke well for the enterprise of Mr. Bryant.

L. W. Seavey, of New York, did not make any special display of his well-known fine work in accessories, nevertheless he had a number of excellent backgrounds that attracted a good deal of attention from the visiting photographers, and many of them secured some of his good work for their studios. His background carrier should be seen to be appreciated.

Packard, of Boston, Mass., also had a good display of backgrounds, which interested a large number of the members. We did not note anything specially noteworthy, all of them being good specimens of this kind of work.

T. G. Caldwell, of New Jersey, also had a large display of photographic accessories and materials for the studio.

Sweet, Wallach & Co., of Chicago, had a small display of photographic apparatus; but we did not notice any novelties.

Allen Brothers, of Detroit, Mich., had a large display of Suter lenses, and the work done with them.

J. C. Somerville, of St. Louis, exhibited a number of his new lenses, "The Universal," also many pictures made by them.

The Endean Chair, which was such an object of interest at Chicago last year, was also to be seen at Minneapolis, with a number of small improvements to render it more convenient.

B. French & Co., of Boston, had their usual handsome display of Darlot & Voigtlander lenses; but we did not hear of any specially new developments in these well-known instruments.

The Bausch & Lamb Optical Co. had a small but interesting exhibit of their lenses of American manufacture. This display was neat, and the finish of the work was entirely in keeping with the well-known reputation of this firm. A novelty in shutters was exhibited by them, being a diaphragm exposer of variable aperture, and available for both time and instantaneous work; it was handsomely finished, very compact, and appeared to us a very desirable piece of mechanism.

The Air Brush Co. had a fine display of work done with their instruments, and a skilled operator was constantly at work giving instruction to any of the members that desired it.

The Gundlach Optical Co. made a small display of their lenses of American manufacture, suited to all the ordinary work of the photographer.

Rosenthal & Co. had a fine exhibit of frames and moldings. Ph. Bonte, of Chicago, made a small but very effective display of imported cards and mounts. Otis C. White exhibited his well-known posing appliances, which he has recently improved in some important details. C. G. Geleng, the well-known enameler, had a very fine exhibit of this class of finished pictures, and the Cellograph, the invention of Mr. Theo. Cain, was shown in a number of excellent pictures. This latter process is practically an imbedding of the picture in celluloid, making it thoroughly waterproof and giving it at the same time a very rich appearance. Several small exhibits by Schultze, of Brooklyn, J. A. Knorr, of New York, and others, were noticed, but we failed to find anything novel in them, although the display was attractive and worth seeing.

Hyatt, of St. Louis, had quite a large display of pictures made with his new "Rival" lens. He also exhibited Kuhn's vignetting attachment and examples of the work done with it. Here also we saw the apparatus for making stamp photographs, which is ingenious and worth seeing; it cannot be readily described.

We cannot close without noting a very ingenious print-washing device, invented by Harry Ford, of Lyndon, Kansas. It can be regulated to change the water in a washing tray any number of times, from one to twenty, and when these changes are made the machine stops, leaving the tray full of water. It was working at the Convention and seemed both simple and effective.

Another exhibit we must not forget was the applications of transferrotype to various purposes of decoration, as china, glass-ware, plates, and such like materials. This was the work of Mr. W. H. Walmsley, of Philadelphia, and exhibited a great deal of ingenuity.

WHAT PEOPLE SAY OF THE INTERNATIONAL ANNUAL.

An immense number of topics are discussed, and the whole field of the rapidly developing photographic art is admirably covered.—*Brooklyn Times.*

It is a valuable addition to our literature; a mine of facts. You deserve gold credit. I have only partially gone through it yet, but I bring up something at every turn.
S. R. Stoddard, Glens Falls.

It far exceeds any expectations I had formed of it, and I really feel quite surprised at noting the list of distinguished contributors.
George Vaux, Jr., Philadelphia.

The "Annual" gives facts, forms and formulas, modes, mixtures and manipulations from A to Z. Every intelligent worker should have it handy, where he can refer to it at all times.
A. Bogardus.

You and W. H. Harrison may well feel proud over it in every respect.
Jex. Bardwell.

It is gotten up in fine form, and very many of the contributors tell me things which I am glad to know. Every purchaser of this volume will get many times their money's worth if they are of the progressive sort.
A. C. Campbell, Bridgeport.

Allow us to compliment you upon the finest photographic publication we have yet seen from an American publisher.
J. C. Lathrop.

I have read many of the articles and consider the editors have made a book suited to all tastes. The shape of the volume is more convenient than the usual form of annuals. Thank you for so much pleasure.
Adelaide Skeel.

I shall read with much pleasure the neat and well-compiled volume.
John G. Bullock, Philadelphia.

It is none the less welcome because it has been somewhat delayed, and may properly enough be called "International."—*Photographic Times.*

Think it by far the most instructive Annual I have ever read. That article by Capt. Pizzighelli on "The Platinum Print" is what I have been looking for for a number of years.
Milton B. Punnett.

The Editors are to be congratulated upon the great variety introduced in the "Annual," and the general excellence of its contents.—*The British Journal of Photography.*

If the reading matter is at all in keeping with its neat exterior, as I have no doubt it is, I have a rare treat in store for myself.—W. Irving Adams.

THIS "Annual" is literally surcharged with interesting and valuable papers on a great variety of subjects connected with the art and science of photography. We notice the familiar names of many who have labored earnestly to advance the cause of photography, besides many new signatures to papers, the contents of which give lively promise of an enlistment of active workers to our ranks. Amongst the many pleasant things in the "International Annual," we must not forget the graceful introduction of the Editors.—*American Journal of Photography.*

ALL the contributions are from men well known in Europe and America. It is one of the most interesting works connected with photography we have ever had, and predict an immense sale of it for the publishers. Each article would have made an excellent paper to have read at our Convention. No photographer should be without this work, and everyone can afford to purchase it, as the price is within the reach of all.—*The Photographic Eye.*

THE work is an important one. It contains 643 pages of reading matter, contributed by a wonderful array of authors from all parts of the world. The editors are to be complimented highly upon their indefatigable industry in collecting so much splendid material together. No one but a bookmaker knows how much work this involves. There are fifty articles we should like to quote words of wisdom from. Everybody should have a copy.—*The Philadelphia Photographer.*

IN it we have the opinions and writings of English, American, German and Austrian photographers side by side, which is of itself a new but very agreeable departure. There is also much valuable information on emulsions, special developers, and photo-engraving processes, besides illustrations of new and novel apparatus.—*Scientific American.*

◆

OUR ILLUSTRATION.

WITH this issue of the BULLETIN we present our subscribers with a handsome photogravure of Miss Ada Rehan in the character of Helena in "The Midsummer Night's Dream," as presented at Daly's Theatre in New York City last winter. It is needless to say that the picture is a characteristic one and well worthy of the great actress it portrays. As an example of photogravure it illustrates one of the latest developments of our wonderful art, which is daily becoming more and more useful to mankind in bringing before his eyes objects of beauty traced with all the faithfulness of the unerring sunbeam.

◆

"I FEAR it can never be, George," said the maiden sadly; "there is an insurmountable obstacle in the way." "I am sure I can remove it, Laura," said George, eagerly, "if you will only let me try." Laura pointed silently to a portrait of her father—a large, cross-eyed man, with red hair, a square jaw, and a foot like a canvas-covered ham; and George took his hat and groped his way out through the hall toward the front door. He wasn't large enough to remove such an obstacle, and he knew it.

ANTHONY'S
Photographic Bulletin.

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Prof. C. F. CHANDLER, Ph.D., LL.D.,
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and a corps of practical assistants.

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E. & H. T. ANTHONY & CO., Publishers.

ROCHESTER ACADEMY OF SCIENCE, PHOTOGRAPHIC SECTION.

At the regular meeting, July 31st, *President* Croughton, after an absence of over a month, on account of sickness, again occupied the chair. Although the night was sultry quite a large crowd turned out to witness James Inglis' demonstration of contact printing and development of his "New Enamel Bromide Paper." And they were more than repaid for their trouble, as the resulting prints were the finest bromides they had ever seen, the tones being very rich and having very much the appearance of those of albumen paper. Both the iron and hydroquinone developers were used; the iron yielding the finer results. The hydroquinone, as used, after prolonged developing, fogged the high lights. James Streeter and H. W. Mathews were appointed a committee to investigate and report regarding an excursion to Stony Brook Glen. John F. Hovey exhibited a fine set of drop-shutter views, taken at the Charlotte yacht race. Chris Kerrigan's groups, taken with the magnesium flash-light, were the admiration of the section. A vote of thanks was extended to Mr. Inglis for his kindness. Subject for next meeting not announced.

Milton B. Punnett,
Secretary.

THE PHOTOGRAPHERS' ASSOCIATION OF CANADA.

The fifth Annual Convention of the Photographers' Association of Canada was held in the rooms of the Ontario Society of Artists, at Toronto, Canada, July 31st to August 2d. Among the exhibits the following were noteworthy: C. A. Tenjoy, of Collingwood, fine large pictures and cabinets; S. J. Dixon, of Toronto, large prints of unusual merit; S. D. Edgeworth, of St. Louis, a fine collection from various sources; W. F. Johnson, of Pictou, a large exhibit of excellent work; R. D. Bayley, Battle Creek, Mich., fine cabinets; Guerin, of St. Louis, some splendid work in cabinets, the children's heads being especially good and finely caught. H. Barraud, of London, Eng., had a fine exhibit, also his relative and namesake of Barrie, Ontario. Both these exhibits were much admired for their fine finish, softness, and the life-like appearance of the portraits. E. Poole, of St. Catherine's, had one of the largest exhibits, and of the first order. His bromide pictures were particularly good, and the whole of his work showed a master's hand in its production. Brockenshire, of Wingham, also exhibited some very fine bromides and enameled pictures, praiseworthy for the fine gradations of light and shade. J. T. Bryce, of Toronto, exhibited a number of large, fine Rembrandt effects and some excellent cabinets. E. D. Clarke, of Guelph, showed colored bromides that called forth much admiration for their great beauty. Pôole and Robson, of Port Perry, also had a good exhibit. William Davison, of Brampton, exhibited a number of pictures of much merit. W. Mecklechwaite, of Toronto, also had a very good exhibit. Zybach, of Niagara Falls, Ontario, had a magnificent exhibit of large photographs of the Falls, both in winter and summer, which were greatly admired.

HARTFORD CAMERA CLUB.

It was a bright, beautiful morning, full of sunshine, that favored the Hartford Camera Club in its outing over the Meriden, Waterbury and Connecticut River road. The weather was an agreeable surprise, as the days generally selected heretofore by the club for such excursions have been rainy and disagreeable.

The club arrived promptly on time at 8.40, with a representation of thirty-three out of fifty working members. The three electric cars were in waiting, as had been arranged. The party filled them and the trip to the West Main street station was very smooth and pleasant. Those who came down from Hartford were :

James B. Cone, President ; Mr. and Mrs. E. M. White, Mr. and Mrs. W. J. Hickmott, Mr. and Mrs. J. C. Kinney, Mr. and Mrs. F. O. Tucker, Mr. and Mrs. A. F. Woods, Mr. and Mrs. F. A. Thompson, Henry Fuller, Lawrence Cody, W. G. Abbott, A. L. Butler, J. C. Hill, H. O. Warner, C. F. Butler, T. S. Weaver, Miss Helen Cody, Miss Abbott, Miss Sarah Green, Miss Mary Green, Miss Harbison, Miss Weaver, Mrs. W. P. Marsh and Misses Mills.

The Meriden people who accompanied the party were Mr. and Mrs. Geo. Rockwell, T. S. Rust, C. S. Perkins, G. L. Ellsbree, A. Chamberlain, Rev. A. H. Hall, A. S. Thomas, J. M. Harmon, G. A. Fay, E. Miller, Jr., Dr. Mansfield, Supt. Crawford. At the Highland House the train stopped and took on Mrs. A. S. Thomas and Mrs. Crawford and her mother, Mrs. Van Kirk.

The run was then made to Cromwell, where the quarry was visited and a large rock drawn up by one of the huge derricks was photographed, besides numerous other scenes. Every kind and style of camera was represented, from the small detective instrument to the large 11 x 14, one of Dr. Rust's.

After an hour of sight-seeing at the quarry and the depot on the Connecticut River, the return trip was commenced. The train stopped at the Highland Lake and views of the Highland House, lake and surroundings were taken. Several boys in bathing became subjects of nearly all the artists. The train then started again and after a few minutes the whistle for down breaks was sounded.

The brakemen, fireman and engineer worked like beavers to stop the cars, but the cause—a cow on the track—was removed before a standstill was reached. The cow was only twenty rods away when it was first seen.

The next stop was for views of Mt. Lamentation—a scene which is one of grandeur, indeed. The gentlemen set up their tripods while the ladies went out into the fields and gathered wild flowers.

The next view was of the iron bridge over the Consolidated tracks and the curve in the road of the Consolidated above the bridge.

The run to the West Main street station was then made without stop, and from there Judge Chamberlain, of New Britain, and Mr. Clarke, of Plainville, accompanied them to Waterbury. —*Hartford Paper.*

PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

MINNEAPOLIS MEETING—SECOND DAY.

(*Continued.*)

Mr. CLARK—Is this going to prevent the repeating of votes ?

Mr. BELLSMITH—Mr. *President*, I think that I shall have to take exceptions to your ruling in this respect as being entirely improper and not sustained by any custom or precedent. There is only one proper way of balloting and that is in the regular manner.

The *President*—If the Convention is not satisfied with the ruling of the Executive Committee they can change it.

Mr. EDGEWORTH—I should think that would be a very fair way, if there is only two candidates ; but if there were three in the field, and if one candidate did not happen to get a majority of the votes, they would have to prolong this a great many days. Inasmuch as there are only two candidates I think it is all right.

The *President*—Is there any motion ?

Mr. LANDY—I move we lock the doors and not let anybody out until the President is elected. Motion seconded.

Dr. ELLIOTT—As one of the tellers I strongly object to that way of election. It is utterly impossible to tell whether anybody repeats. I believe there is something in the Constitution which says we should vote by ballot.

The question then being on locking the doors during the election, it was carried with applause.

Mr. BELLSMITH—I move that the Secretary be instructed to place a card at the door down stairs, stating the hour of the election, so that everybody may be informed and not come up here a little too late, and that he also obtain paper of a color different from ordinary white and of some peculiar shape for ballots, and that such ballots be distributed at the meeting and that ballots on that paper only be accepted by the tellers.

Motion carried.

The *President*—The next thing in order is the report of Special Committees.

Mr. BELLSMITH, in presenting the report of the Committee on Fire Insurance, said: At the last Convention held in Chicago a committee was appointed for the purpose of calling the attention of the Board of Fire Underwriters to the present unfair rating of photographic establishments. The committee consisted of Mr. Staples, of Indianapolis; Mr. Stewart, of Hartford, and myself. A meeting was called in New York in June, Mr. Stewart and myself being present. We there met the National Board of Fire Underwriters and placed our grievance before them, and received in return a promise of consideration and investigation, but we also learned that the classing of risks and rates does not rest with the National Board, but with the State Boards, although the National Board have a great deal of influence. I obtained from the Secretary the names of the Secretaries of the State Boards, and have drawn up a petition, gathering such information as was possible, and have sent it to eighteen of these State Boards, and I believe, from the replies that I have received so far, although the petition was only sent out a few weeks ago, that we may be decidedly encouraged and may expect in the nearest future, not only a reduction in rates, but a change in classification, which, as you must all readily see, is of the greatest importance. I will read you the petition that was drawn up and presented to the Underwriters.

Petition then read.

Mr. BELLSMITH—This report has been rather lengthy and perhaps a little dry, but we had to go into details and make as good an argument as we could with the material at hand, and in the replies that I have received from the secretaries of the boards, they have complimented us upon the case we have made, and we have every reason to expect immediate action. I think we have reason to congratulate ourselves upon it.

Moved that the report be accepted with thanks and the committee discharged.

The question then being on the acceptance of the report, it was agreed to.

The *President*—There was a committee appointed to procure a testimonial to Mr. Henry T. Anthony. That committee have in reality finished their work and report as follows:

MINNEAPOLIS, Minn., July 11, 1888.

Your committee beg to report that the model for the bronze tablet to be erected to the memory of Henry T. Anthony has been made and is now in the hands of the Henry Bonnaud Bronze Company of New York to make the casting, which will be completed in a week or two. It will consist of a rectangular tablet, 26 x 16 inches, with a frame-like border and four floral rosettes in the corners.

The following is the lettering:

IN MEMORIAM

HENRY T. ANTHONY.

FROM

THE PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

"By their works shall ye know them."

E. DECKER,
Committee.

The *President*—I would say this committee was authorized last year to draw upon the treasury for the amount this memorial would cost, and this is only a report of our work.

We shall have an adjourned session this afternoon at 2 o'clock, so that we can get through our business and off to Minne-ha-ha.

The *President* announced that the drawing for Mr. Cramer's prize would be made at the afternoon session, and desired that all members be present.

We will announce the third judge of awards at the opening of the afternoon session.

The meeting then adjourned until 2 o'clock P.M.

AFTERNOON SESSION, July 11th.

Meeting called to order by the President.

The *President*—Is there anything further to be offered under the head of new business? If not, we will proceed to the reading of the papers.

The first paper on the programme is a very interesting one, and I am sorry that the author cannot be here. It is "Photography as a Fine Art," by Enoch Root, who is a writer on the art. I requested him to write us a short paper.

The paper was then read by the President. (See page 431.)

W. H. H. CLARK—I move a vote of thanks to Mr. Root for his very excellent paper.

The *President*—Mr. Root is a professional writer. I requested an article from him and offered to pay for it or to let him make his own price. He said that anything that he could do for this association to help along its aims he would do without one cent of pay. I think the vote of thanks ought to be very unanimous.

The motion of Mr. Clark was then carried unanimously.

The *President*—The next paper is a very practical one by a practical man. I am very sorry he could not be here.

I will now read the paper "The Science of Developing Dry Plates," by J. Carbutt. (See page 460.)

Dr. ELLIOTT.—I move a vote of thanks to Mr. Carbutt for his very valuable paper.

Motion unanimously carried.

The *Secretary* then read the names of judges to make the award for the Acme Burnisher Company's prize, as follows: J. W. Williams, Rome, N. Y.; J. E. Bilbrough, Dubuque, Ia.; J. R. Pearson, Pittsburg, Pa.

The *President*—The next paper on the programme is "Reducing the Intensity of Negatives," by Professor Charles Ehrmann. This is something I suppose we all have to do occasionally in order to produce the best results. (See page 428.)

Dr. ELLIOTT—I move a vote of thanks to Mr. Ehrmann for his very interesting paper.

Motion unanimously carried.

The *President*—The next paper on the programme is "Photographic Objectives; Facts and Falacies Regarding Them," by Mr. Edward Bausch.

I have now the pleasure of introducing to you Mr. Edward Bausch, of Rochester, N. Y.

Mr. BAUSCH then read his paper, as follows: (See page 456.)

Mr. WILSON—I move a vote of thanks for the paper of Mr. Bausch.

Professor CHARLES FORBES, Macalester College—I take great pleasure in seconding that motion, as this reminds me of the time when Mr. Bausch took a great deal of pains in showing me through his factory.

Motion carried unanimously.

The *President*—I have here a question which was sent up to me by Professor Forbes. It reads as follows: "Mr. Decker, will you kindly inform the meeting what is understood by 'so many parts of water;' *i. e.*, what does the term 'parts' signify?"

He has asked the question of me, and, of course, I can very readily tell you what I consider the term "parts" to mean. I use one ounce of any one solution in so many ounces of water; *i. e.*, so many parts. I would like to hear any other person's idea on this question of Professor Forbes.

Professor FORBES—When you are making up the original solution, so many parts of the dry salt are said to be taken and so many parts of water. One is a solid and one is a liquid ounce. What does the term "parts" signify in that connection?

The *President*—That is what I should like to hear from others; where there is used an ounce by weight and so many ounces of water.

Dr. ELLIOTT was then called for to make some remarks upon this subject.

Dr. ELLIOTT—I am a metric system man. I believe in percentage solutions, and when I talk about percentage I mean something like this: Suppose we wish to make up 100 ounces of fluid, or 100 pints, or 100 gallons. In the case of ounces and pounds the problem is easy enough. There is not sufficient difference between the weight of one ounce of water and the weight of one ounce avoirdupois to make much difference. According to the United States standard, which regulates the fluid ounce of this country, there are about 450 grains of water, that is to say, avoirdupois grains, in the fluid ounce. It may be 451 grains, but as I remember it is 450, at least that is near enough. The avoirdupois ounce has 437½ grains only. In making solutions there is no difference whatever whether we take 450 parts or 450 grains avoirdupois. If we take 10 ounces water and add 1 ounce sulphite of soda we have one part in 10 parts. If we take 5 ounces water and add to it 1 ounce of carbonate of soda there will be 1 part in 5. If we take 1 grain and dissolve it in 5 grains water there will be 1 part in 5. Now if you use the French system of weights and measures, which is just as easy as the English—I use them every day of my life—you will find them a great deal easier than pounds, pints or gallons.

The French gram is one cubic centimeter of water or it is the cube of the one hundredth part of a meter. If I say a 1000 grams it means the same as a 1000 cubic centimeters. The tenth part of a meter is a decimeter, the one hundreth part a centimeter. The system goes by a scale of tens in either direction, both solids and liquids, both weights and measures, and I am strongly in favor of the whole photographic fraternity adopting the French system. If you once get to using it there wouldn't be any of this trouble about grains in an ounce, ounces in a pound, or parts in a volume.

No matter whether they are pounds, or gallons or ounces, we must have the parts all of the same denomination. If it is ounces, whether it is one ounce of solid and so many ounces fluid or not, it must be in the denomination of ounces.

"A pint's a pound
The world around,"

is an old saying. There are 16 ounces in a pound and 16 fluid ounces in a pint.

You can dissolve grains in grains, ounces and pounds because those are parts in parts.

Professor FORBES —I think we are all very glad to hear this plain explanation. I think this sets us right. I am fully in accord in using the metric system. I have used it many years in my laboratory. It is so simple and convenient if you have once become accustomed to the terms used. They are so easily changed from one to the other. If you try it you will be surprised to think that you have waited so long; that is, if you have not already adopted the system. A gram is simply a cubic centimeter of water. If you are told to take 10 grams of solid and 10 grams of water, you can measure the water.

Dr. ELLIOTT—Some people among us think these weights and measures very difficult to obtain. You can get these weights and measures just as easily as you can get the avoirdupois weights. In every civilized city in the world you can buy them.

The *President*—I have to announce the name of the third judge of awards who has been selected by the two that were appointed this morning. It is BARTON S. HAYS, an artist of this city. The same committee will act on the "Hiawatha" prize.

The *President*—Are there any more remarks to be made in regard to the question propounded by Professor Forbes?

The next business in order will be the disposing of our Brother Cramer's prize. It has been proposed that the box containing the coupons shall be shaken up very thoroughly, that some lady or child should, if possible, bare her arm, put it in the box and take out one number, and that number should draw the prize, if the person was present in the building regularly attending the Convention.

I think it would be better to have a committee to superintend the drawing. I will appoint the committee for that purpose, or I would like the Convention to name some parties. I would rather they would do that. The following gentlemen were then named: J. H. Doerr, of Louisville; D. H. Cross, of Des Moines; C. Gentile, of Chicago.

The Committee then shook the box thoroughly and the drawing was made by Miss Claire Paris, amid a storm of laughter and applause.

The *President*—I have to announce that Coupon No. 370 has drawn the prize of $100 offered by Mr. Cramer, of St. Louis.

The holder of the lucky coupon is Mr. Holden, Luverne, Minn.

The *President*—If there is no further business we can now get ready for our excursion to Minne-ha-ha. Meeting adjourned till 10 A.M., July 12th.

THIRD DAY.

Morning Session, July 12th.

Meeting was called to order by the President at 10.30.

The *President*—I have a couple of announcements which have been sent up to be read, as follows:

MINNEAPOLIS, MINN., July 12, 1888.

We, the undersigned, Committee on "Acme Burnisher Prize," award the prize to H. McMichael, of Buffalo, New York; J.W.Williams, L. I. Brobrough, J. R. Pierson.

MINNEAPOLIS, MINN., July 12, 1888.

We, the undersigned, Committee on Blitz-Pulver flash-light prize, award the prize to L. C. Overpeck, of Hamilton, O.; L. I Brobrough, J. R. Pierson, J. W. Williams.

The *President*—I wish to state that we have decided to bring up the election of officers promptly at 11.30, and the balance of the business on the programme to-day will be postponed until we are through with the election.

Communications are the next business in order.

There being no communications to be read, the next order of business is unfinished business.

Mr. French, I think you gave notice of a proposed change in the Constitution yesterday.

Mr. French then read the proposed amendment, as follows:

First.—That Section 1 of Article 3 be amended so as to read as follows: The officers shall consist of a President, a First Vice-President, a Second Vice-President, a Third Vice-President and a Secretary-Treasurer, who shall hold office for one year from the first day of January following their election, or until their successors are elected.

Mr. FRENCH—That is the first change necessary.

Mr. LONG—I would ask for information; does this mean that the office of Secretary-Treasurer shall be held by one and the same man, or two separate men?

The *President*—One man. Mr. French, do I understand you to make a motion that the Constitution be changed in this way?

Mr. FRENCH—Yes.

Mr. BELLSMITH—I would like to inquire whether this would include the ten per cent. received by both officers?

The *President*—That will come up under another article.

Dr. ELLIOTT—In connection with this new office it is important for us to remember that it is essential to have a Secretary. We cannot conduct a meeting with only a President. Now the Treasurer has got all that he can do in the Treasurer's office down stairs, and it appears to me some provision must be made for a Secretary. He might be appointed or elected at the time of meeting and we might call him a local Secretary, but I cannot see how the office of Secretary and Treasurer can be merged into one, and the Secretary attend to his business and the Treasurer attend to his business.

The *President*—I have heard considerable from both the Secretary and Treasurer to the effect, since I have been in this city, that the two offices should be conducted by one man, except during the Convention. And that the work can be done very much better by one than by two men. I will call upon Secretary Potter to give you some information on this subject.

Mr. W. H. POTTER—Mr. President, there is certainly a great deal of confusion between the two offices. I got a letter this morning which Mr. Carlisle handed me as I started up stairs. Upon opening it, I found it to contain two dollars for payment of dues, and I had to go back down stairs and hand it to Mr. Carlisle. Yesterday I had one containing a two dollar express order, which I handed to Mr. Carlisle, and he refused to receive it, as it was made payable to me. And there are a great many things that come to me directly that should go to him first, and *vice versa.*

I think the very first dues paid in for the year were sent me by postal order, at Indianapolis, and I had then to settle with Mr. Carlisle, who was in Providence, R. I. And then in regard to certificates of exhibits they send to me first, and I have to write them, referring them to Mr Carlisle, and he signs them, so that they will show that they have paid their dues, and to fill out their certificates and send to me.

Now, between sessions, there is no doubt but that one man can attend to both offices. And during the sessions of the Convention the First and Second Vice-Presidents can be given certain work to perform, as we have done this year, and the Third Vice-President could act as Secretary, and such Vice-President acting as Secretary would have nothing but the Secretary's duties.

Dr. ELLIOTT—It must be distinctly understood that I am not raising the objection to the Secretary and Treasurer, but as to how the thing is going to be managed. You might elect somebody at the time of meeting and call him the local Secretary, or, as Mr. Potter suggests, it might be considered the duty of the Third Vice-President to act as Secretary at the meetings.

The *President*—That was my idea.

Mr. BELLSMITH—I have had one year's experience in the office of Secretary, and think I can speak somewhat intelligently upon this subject. During last year I certainly found that the work kept me busy, not only during the day, but during the night, both during the Convention and for nearly a week before and several days after, and the amount of work during the balance of the year was sufficient to require all the spare time that I could afford to take from my business, and if Mr. Potter has had such an exceedingly easy time of it this year it is because of the —— well, I suppose it is because of the lack of attendance.

I think the reasons Mr. Potter gives are very insignificant and of little importance. Because he happens to get one or two letters by mistake from members that ought to know better, it is no argument that we ought to have no Secretary.

I don't see why the sudden desire to economize should happen to strike at various places among our members at this time.

We have got an ample surplus in the treasury. We are organized for the purpose of advancement of photography among the devotees of our art, and that should be our prime object. The annual dues—only two dollars—are not a heavy tax upon anybody, and I have not heard anybody complain, and I think we are quite capable of supporting the officers and of giving them plenty to do. I am decidedly opposed to the amendment. I think at the next Convention, which undoubtedly will be four times as large as this, that we will probably have more work than the two men can do. At the Convention, during my term of office, even with the aid of Mr. Gentile, a very efficient local Secretary, we had all we could do to carry on the affairs of the Convention successfully, and I therefore oppose the change in the Constitution.

Secretary POTTER—Of course, I am not advocating this thing, because heretofore I have been of the same opinion as Mr. Bellsmith in regarding to merging the two offices, and when I spoke it was of the actual duties of the Secretary. Now, they have appointed me a member of the Railroad Committee, and that has given me three times as much to do as the regular work of the Secretary. I have had, I think, at least three times the amount of correspondence on account of the Railroad Committee than anything else. Communicating with the General Passenger Agents' Association, and so on, it made an immense amount of correspondence; besides that, I had to send out these railroad certificates to a great many points, and that has made a great deal of work. Talk about work. I never worked so hard in my life.

Mr. BELLSMITH—This matter is a report of a committee made, as I understand, at the suggestion of the President. There has been no motion, no expression from the audience to have this change made. President Decker simply making the suggestion to be acted upon.

I happened to be on the committee that drew up the Constitution, not only the revised one, but the one that was originally drawn up in Cincinnati, and I know the amount of work we put on that Constitution. It was acted upon very carefully, indeed, and it has worked admirably, for our association is in a prosperous condition, and we are growing steadily. I think we want to let it alone, and not dabble with the Constitution any more.

Dr. ELLIOTT—I think that there was some recognition at Chicago by the committee, that these two offices should be merged. If I remember correctly, there is a recommendation by the Committee on Constitution that the office of Secretary and Treasurer should be merged into one, though they were not prepared to recommend any action at that time.

Mr. GENTILE—I am quite satisfied that it will be a great mistake to change the Constitution in this matter. Last year the three officers—Secretary, Treasurer and local Secretary—had all they could possibly do, and if we are going to have the Convention in Boston it will be attended like that of last year, and it will be absolutely impossible for one man to attend to the whole business. Of course, if this insurance business had been merged into the association it would perhaps have been well to merge the two offices and to have paid him in such a way that he could have afforded to employ assistants. It is quite impossible for one man to attend to the whole business of this association unless you pay him so that he can employ assistants.

Dr. ELLIOTT—It appears to me we are forgetting the proposition to make the Vice-Presidents work; the idea, it appears to me, that the Vice-Presidents should come in for a good deal more work than they did in Chicago, where it is perfectly true that the Secretary and President did all the work, and did it well, too, and the other officers, doubtless, had a sort of sinecure. Now, it seems that the arrangements are for the First and Second Vice-Presidents to do some of the work, as they are doing here, and if we are going to have a local Secretary appointed or a Third Vice-President to do the work of a Secretary, I think that the offices of Secretary and Treasurer could be very well amalgamated, since the Secretary's work would then be done by the local Secretary at the meeting, and that would be all he had to do.

The *President*—I wish to state to this Convention that I made this suggestion to the committee on what others have said to me about it. I don't know whether I should recommend it or not, but from what I have heard from the Secretary and Treasurer I think the business could be done much better by one man than by two, and particularly if the Third Vice-President was given some work to do.

At the meeting of the Executive Committee last winter, we decided that the Vice-Presidents were not merely figureheads; that there was work enough for them all to do, and that they should do some of it as well as receive some of the honor. This is being done here. I personally don't know any more about it than what I heard from others.

Mr. CUNDELL, of Moquokita, Ia.—What is the expense connected with the two offices now?

The *President*—They each receive ten per cent. of the gross receipts.

Mr. CUNDELL—About how much is that?

The *President*—Ten per cent. of the receipts, whatever they may be; I can't state the exact amount.

Mr. CUNDELL—Is it the understanding that if we merge the two offices into one that they receive just one-half of this amount, or that one man receives it all?

The *President*.—If you adopt this recommendation of Mr. French's, that will have to be passed upon in another article. This is simply to amend Article 1 of Section 3. Are there any further remarks?

Secretary POTTER—I would like to make just one more remark. We are familiar with the fact that the percentage of the Secretary and Treasurer was increased last year to ten per cent. instead of five, and Mr. Carlisle thought that we would economize on that score and do a little harder work and save the local Secretary. My experience teaches me that it is just about impossible to get along without a local Secretary.

The *President* then read the motion and put the question. Upon a rising vote the motion was defeated. Is there any other unfinished business?

Mr. FRENCH—This will necessitate our changing the list of nominations, and the committee will now name for Secretary Mr. Cook Ely, of Oshkosh, Wis.

Mr. GENTILE—I have Mr. Cook Ely's word as authority that he cannot accept that position, therefore you will please nominate some one else.

The *President*—Is there any other unfinished business?

Mr. BELLSMITH—I would like to announce the award of prizes offered by the Eastman Dry Plate and Film Co., of Rochester, N. Y. (See last BULLETIN).

The *President*—The next order of business is new business.

Mr. O. P. SCOTT, Chicago, Ill.—In looking over the number of exhibits here, I see that there are a great many more parties competing for prizes than will be able to secure one, and I think it will be a nice thing to have the Executive Committee, or some one authorized to do so, give each and every exhibitor a certificate showing that he has done the best he could, and is entitled to a reward of merit. I therefore, if it is in order, make a motion to that effect.

The *President* requested Mr. Scott to present his motion in writing. In the meantime has any member anything else to offer under the head of new business?

Dr. ELLIOTT—Mr. President, we have with us in Convention here a gentleman who has done a great deal of work on flash-light photography in the East. I mean Mr. George G. Rockwood. One of his achievements was photographing two thousand people at ten o'clock at night. Now, Mr. Rockwood says that if some one will ask him how he does it he will bring it before the Convention. I want somebody to suggest to Mr. Rockwood to tell us about his method of work, as I think it will be interesting to all here. You all know this flash-light photography is taking a more and more prominent position in our art.

Mr. GENTILE—I move that Mr. Rockwood be invited to give us a demonstration the same evening that we have the lantern exhibition.

Secretary POTTER—I find that it is impossible to get a hall for an evening session. I spent two hours yesterday morning looking for one. The Odd Fellows have something on for to-night and to-morrow night the Grand Army have something.

Mr. Malcomb who, when we were here last winter promised us the use of his hall, is out of the city, and has left no person here authorized to let the hall.

Dr. ELLIOTT—I think that rather than lose the opportunity of seeing this, we may as well take it in the day time. Although perhaps he could not make a picture, I think he will be able to explain his method of working very nicely. I think it would be very nice to have a hall and have a demonstration, but if we cannot have that let us have all we can.

Mr. W. H. H. CLARK—I would like to say a few words on this subject. I see my name is on the programme to speak on that subject. There is a little misunderstanding between myself and the Secretary about that, and as I am advertised on that subject I would like the permission of the Executive Committee and of the association to invite Mr. Rockwood to take the place himself, as I am entirely unprepared to say anything on the subject, as I did not know that I was on the programme for that subject until I reached this city.

The *President*—It would certainly be very much more interesting to have some place at night, but as it seems impossible to get a hall for that purpose I think it would be very well to have it in the day time.

It was then moved and unanimously carried that Mr. Rockwood be invited to give his exhibition at the time assigned Mr. W. H. H. Clark for his paper on flash-light.

Dr. ELLIOTT—I think the demonstrations can be made in the day-time and give very good effect.

The *President*—We will try and make arrangements for that to-morrow morning, as there will not be time for it this morning. Is there anything more under the head of new business to be offered?

Dr. ELLIOTT—I have here a couple of Mr. Rockwood's pictures that I will pass around to show the class of work that he does.

The pictures were shown and greatly admired by all.

The *President*—It seems that the Constitution and By-Laws have not been procured by quite a large number of the members, as they got their receipts from the Treasurer. I will say if they will stop at the Treasurer's office they can get a copy, as he has them there for distribution.

Mr. Scott's motion having been presented in writing, was then read by the Secretary as follows: "It is moved and seconded that exhibitors who have meritorious exhibits at this Convention and who shall not have received a medal of any description shall be given a certificate of merit to be designated by the judges as they may deem proper, provided, that it shall be limited to one certificate for each class."

The *President*—What will we do with this motion? Are there any remarks?

Secretary POTTER—We have certificates here to be given with the medals. There are enough so that they can be used for this purpose. The necessary changes could easily be made with a pen.

Mr. CLARK—I would like to ask the mover of that resolution if these certificates are to be issued to all exhibitors that exhibit at the Convention, or does it include competition for prizes. In other words, are all the exhibitors at the Convention, or are only the competitors for prizes to receive these certificates?

My reason for asking this is this: If certificates are offered to any one we will be flooded with trash. If any one exhibiting can come here and get a certificate, that would be all they would calculate to get. It seems to me that there should be a bar to exhibitors; there should be a committee appointed to see what is being put on exhibition. If not, any one can come forward and take those certificates that their work is meritorious, when it is a great deal below par.

Mr. LANDY—As I understand it, these certificates are to be given on recommendations of the judges.

The *President*—That is what the resolution stated.

Mr. CUNDELL—I do not think that we will be bothered with too much "trash," and I think that we ought to have as many exhibitors as possible, and if we could give anything of that kind it would tend to bring out exhibitors. I think it would be a good scheme. And if a man who is a member of this association should put on exhibition photographs—his best work—and finds out on comparing it with other work which will go ahead of him, he will go home and do better work, and the next year he will bring better pictures. I say, let us have all the trash, as you call it, we can.

Mr. BELLSMITH—I should oppose giving a certificate showing or giving the official endorsement of this association to any man except his work is of superior quality. The object of this association, among others, is the advancement of merit, and if a diploma were given everybody who choose to bring works and simply enter them in competition, the majority of a certain class would be satisfied with that diploma. But it will not make it of any great value, but if they have to strive for the diploma first, in order to get it, then it will have more stimulus.

Mr. SCOTT—In that resolution it reads like this: That only those who have meritorious work, and the judges can be judges in that respect, also. I think there is lots of work down there that deserves something. I think these certificates are the proper thing to have.

Mr. CUNDELL—I so understood the words of the resolution that I made the remarks that I did. I do not favor giving a certificate of merit for all classes of work, but I say that I want all of that trash we can get here, if you have a mind to call it trash.

Dr. ELLIOTT—It is a very common thing in making awards in exhibitions of all kinds to give honorable mention to all work that is very nearly as good as the prize winners. I think that the judges should be instructed to mention those pictures that nearly approach those of the medalists, and issue certificates to them of honorable mention, showing that they are only just below the prize winners in standing.

Mr. LANDY—I move as an amendment to the motion of Mr. Scott that we have the same number of certificates as there are prizes.

Dr. ELLIOTT—Does that mean that in a class where we have a gold medal, a silver medal and a bronze medal, there shall be but one certificate of honorable mention?

The *President*—That is the way it is understood.

The motion was then put and unanimously carried.

The *President* then announced the hour of 11.30 as the time for the election of officers, and that there will be time for the reading of one paper. The first paper on the list is "Dry Plates," by Mr. G. Cramer, of St. Louis, Mo.

The *Secretary* then read Mr. Cramer's paper. (See page 459.)

Mr. W. H. CLARK.—I move that a vote of thanks be tendered ex-President Cramer for his very able paper.

Motion unanimously carried.

A recess of a few minutes was then taken, in order to allow members to come in before the election of officers.

The *President*—Members of the Convenvention: You instructed a committee to send a telegram yesterday to Mr. Cramer. A copy of that telegram is here now, and I would like to have Mr. Landy read the same to you.

Mr. LANDY then read the dispatch, as follows:

[Telegram.]

Exposition Building,

Minneapolis, Minn., July 11, 1888.

G. Cramer,
St. Louis, Mo.:

The Photographers' Association, in Convention assembled, and in response to your letter of regret, unanimously vote: That the sympathy of this association be tendered to you in your affliction, that our loss, in your absence, may be your gain in a speedy restoration to health. The love and good will of this association are ever with you.

J. Landy,
W. H. Potter,
W. H. H. Clark,
Committee.

The *President*—The time has arrived for the election of officers. The balance of the programme for to-day will be postponed until to-morrow morning. In the place of the paper, "Flash-light," by Mr. Clark, we will have a demonstration of the flash-light by Mr. George G. Rockwood. I will ask the members at the door to come in, as that door must be closed, and kept closed during the election.

The *President*—Dr. Elliott is Chairman of the tellers. Will the other tellers please step forward with Dr. Elliott?

Mr. Jones—I move that the tellers receive the ballots as the members come forward and place them in the box on the platform.

The *President*—I think that will take too much time. There is a report to be made at this time in regard to the nomination of officers. I will call upon Mr. French to read that report.

Mr. French—The committee have been obliged to revise the list of candidates for offices somewhat, on account of the rejection of the amendment merging the offices of secretary and treasurer in one. The list will now read as follows:

Report of the Committee on Nominations.

For President—H. McMichael, Buffalo, N. Y.; S. L. Stein, Milwaukee, Wis.

First Vice-President—George H. Hastings, Boston, Mass.

Second Vice-President—J. M. Appleton, Dayton, O.

Secretary—S. L. Stein, Milwaukee, Wis. (The President having been elected).

Treasurer—G. M. Carlisle, Providence, R. I.

W. A. French,
Cook Ely,
B. L. H. Dabbs,
H. Z. Morton,
A. H. Plecker,
Committee.

The *President*—Will the tellers appointed yesterday now step forward?

Dr. Elliott and J. H. Doerr came forward. The third teller not being present, the President appointed Mr. D. P. Thompson, of Kansas City, Mo., to act in his place.

The *President*—I will state that there was a resolution adopted by the Convention yesterday that there should be just one single ballot passed to each member of the Convention, of colored paper, which the teller will get of the Secretary. We will, of course, elect but one officer at a time. If the tellers will now distribute the blank ballots, we will proceed to the election. In the meantime we are open for nominations.

Mr. Bellsmith—I rise to perform a decidedly agreeable duty in expressing what I believe to be the sentiments of the majority of our members. A gentleman from New York has recently come among us, but whose acquaintance we have made years ago, and whose reputation and standing among our fraternity is well-known to all of us. I am sure he has received a hearty welcome. We are glad to have him come amongst us again. And in appreciation of his ability as a photographer and as an executive officer, I desire to place him in nomination for President, and would nominate Mr. George G. Rockwood, of New York.

Nomination seconded.

Mr. Landy—I desire to second the nomination of Mr. McMichael, of Buffalo, New York.

Mr. Landy then proceeded as follows: Mr. McMichael is a well-tried officer. The success of the Buffalo Convention was all Mr. McMichael's work, and since that time our Conventions have been carried on in a systematic business way. It was he who inaugurated the charging for space. Before that our affairs were borne principally by contributions. He charged for space when men did business there, and helped to pay our expenses and carry on the business of the association. And he is an energetic "Hustler from Hustlerville." I think the association owes him this honor for the services he has already rendered.

Mr. Rockwood—I wish it was not only possible to second a motion, but to third it. I would like to add my voice to the gentleman's remarks, as I feel as strongly as any one can that Mr. McMichael, owing to his long service in this association and his remarkable work therein, is fairly entitled to the honor which is proposed.

I was asked if I would consent to a nomination. I said if there was any special reason for my being nominated and elected, on account of location or anything of that kind, I would consent to it. I think now it is proper for me to withdraw that consent and third this nomination.

Mr. LANDY—I wish to say that I do not oppose Mr. Rockwood in any way. I honor Mr. Rockwood for his ability and talent, and what he has done for photography. I simply seconded the nomination of Mr. McMichael, not as opposed to Mr. Rockwood. I don't know in fact who I would rather see President than Mr. Rockwood himself. But to Mr. McMichael I feel the association owes this honor.

Mr. GENTILE—As there is no opponent to Mr. McMichael, I move that the nomination be made unanimous. I have been opposed to Mr. McMichael, but not from any personal animosity whatever, although such has been attributed to me. I respect him as a gentleman and good photographer. I have my own reasons for wishing to oppose him. As there is no opposition, we might as well make the nomination unanimous for Mr. McMichael, and I, therefore, move that the Secretary be instructed to cast the unanimous ballot of this association for Mr. McMichael.

The motion was then carried unanimously, with applause.

The *President*—I will appoint Mr. Rockwood, of New York, and Mr. Landy, of Cincinnati, to wait upon Mr. McMichael and escort him to the platform. I will appoint Mr. Jones as Sergeant-at-Arms to see that there is no passing out at the door until we are through with the election.

While we are waiting for Mr. McMichael, I will state the nominations for Vice-Presidents.

For First Vice-President, George H. Hastings; for Second Vice-President, J. M. Appleton, Dayton, O.

We are now open to further nominations for Vice-President.

Mr. GENTILE—I put in nomination Mr. J. G. Morris, of Pittsburg.

Nomination seconded.

Mr. GENTILE—I think Pennsylvania ought to be represented among the officers of this Convention.

Mr. McMichael was then conducted to the platform amid applause.

The *President* congratulated Mr. McMichael—and introduced him as follows: *Ladies and Gentlemen of the Convention:* It is with the greatest pleasure I introduce to you your unanimously elected President for the succeeding year, Mr. H. McMichael, of Buffalo.

Mr. McMICHAEL—*Mr. President, Ladies and Gentlemen:* I most sincerely thank you for this great honor, for it is indeed an honor to be elected unanimously, as they have informed me that I am elected to the presidency of the Photographers' Association of America. It is an honor also because it substantiates a past record. It is an honor, also, because next year is the fiftieth anniversary of the birth of photography, when Daguerre gave it a free gift to the world. I trust that I shall have the pleasure of greeting you all in Boston next year. As we have come to the West, and we have seen photographers with what we call "Western push." I hope we shall see you all in the East and show you what we call "Eastern push."

We shall not only have a Convention, but a celebration, the like of which we will probably never have an opportunity to see again. Again I thank you for this great honor.

Mr. GENTILE—As I stated before, I think something is due the Pennsylvania, delegation to this Convention. They have always attended in a large body, and they have been large exhibitors and presented us photographs of merit. I think we should choose our officers from those who come to this Convention. I think we ought to select some one from that part of the country, therefore I place Mr. Morris in nomination.

Dr. ELLIOTT—If we are going to have a nomination from Pennsylvania, I take great pleasure in placing in nomination Mr. B. L. H. Dabbs, of Pittsburg.

Mr. DABBS—I say positively I will not accept a nomination for this or any other office.

Mr. W. H. H. CLARK—I rise to second the nomination of Mr. Hastings, of Boston. I suppose that you all know it was mainly the intention of the Executive Committee in making up the programme and placing the nomination of the place for holding the next Convention before the election of officers, that at least one officer might be selected in the neighborhood where the Convention was going to be held. We have elected Boston as the place of holding our next Convention and it does seem as if one officer should be from that section of country. As to Mr. Hastings, to use the expression of Mr. Landy: "He is a Hustler from Hustlerville." And as we have done away with the local Secretary he will undoubtedly save the Convention $200.

The *President*—Is it the sense of this Convention that we shall vote separately for each officer, or will you vote for the two officers together? The tellers will proceed to distribute ballots for Vice-President.

Mr. GENTILE—I move that we vote for both First and Second Vice-Presidents at the same time; the one getting the highest number shall be First Vice-President, and the one getting the second highest number of votes shall be the Second Vice-President.

Mr. MORRIS—How can that be managed without confusion? Suppose each member puts the name of two candidates upon the same ticket it will result in a tie.

Mr. CLARK—In writing the ballots they can write one name for First Vice-President, and the other stating that it is for Second Vice-President.

The motion of Mr. Gentile then being put, was lost.

The *President* announced that the meeting would adjourn directly after the vote for First Vice-President, and that the balance of the officers would be elected in the morning. He requested the members to remain seated until after the result of the ballot had been announced.

After the count had proceeded for some time, Mr. Gentile said—It is evident that Mr. Hastings has a majority of the votes, and I wish to withdraw the name of Mr. Morris and make the election of Mr. Hastings unanimous.

Mr. BELLSMITH—I object. We want the number of votes.

The *President*—I announce the ballot for First Vice-President as follows: Mr. Hastings, 154; Mr. Morris, 21.

Mr. CLARK—I move that we make the election of Mr. Hastings unanimous.

Motion carried.

Mr. FRENCH—I move that we continue the election of officers, as it will only take a few minutes more.

The *President*—It has been announced that the election would be postponed until tomorrow.

The meeting then adjourned until 10 o'clock Friday morning, July 13th.

FOURTH DAY.

Morning Session, July 13th.

Meeting called to order by the President, 10.45.

The *President* invited Mr. McMichael to a seat on the platform.

First order of business is reading of communications.

The *President*—I wish to state to the Convention that I have a communication here that is anonymous, and I do not propose having it read. If a member wishes to make a communication by signing his name, it can be done.

Next order of business is the report of committees.

There being no reports to be read, the next order of business is unfinished business, under the head of which comes the finishing of the election of officers for the ensuing year.

The *President*—Ballots will now be distributed on which you will vote for the Second Vice-President for the ensuing year.

The Committee on Nominations have, for that position, nominated Mr. J. M. Appleton, of Dayton, O.

Mr. GENTILE—I move you, sir, that the Secretary be instructed to cast the unanimous vote of this association for Mr. J. M. Appleton for Second Vice-President.

Motion seconded by several and unanimously carried.

The *President* invited Mr. Appleton to a seat upon the platform, which he took amid applause. Members of the Convention, allow me the pleasure of introducing to you your Second Vice-President for the ensuing year, Mr. J. M. Appleton.

Mr. APPLETON—*Mr. President, Ladies and Gentlemen of the Convention:* I had not expected this honor to be conferred upon me when I left home. It has come upon me as a surprise that my name was mentioned. I am not an orator. I am not even a speechmaker; but I take this occasion to thank you very heartily for the honor that you have conferred upon me; and I trust that my services, whatever they may be, of whatever nature, may be disinterested and for the best interests of the Photographers' Association of America. Again I thank you for your kindness.

The *President*—The next officer to be elected is a Secretary, for which position the committee have nominated Mr. S. L. Stein, of Milwaukee, Wis.

Nomination seconded.

The *President*—Are there any further nominations?

Mr. PICKERELL—Mr. President, I have the nomination of a gentleman who is known quite favorably to most of the members of the association, and while there has been several "Hustlers from Hustlerville" nominated, I want to nominate a Ratler from Ratlerville, Mr. Oliver P. Scott, of Chicago.

Nomination seconded.

Mr. W. H. H. CLARK—I move that the nominations for Secretary be now closed.

Motion carried.

Mr. STEIN—Before the ballot is taken I wish to state that I was up for this office only at the urgent request of friends, and if my friend, Mr. Scott, is going to be kind enough to take that burden off from me, I will gladly withdraw in his favor. And I would like to see everybody go in for him.

The *President*—Mr. Stein declines to be a candidate for this position. There is now no name before you except that of Mr. Scott, of Chicago.

Mr. GENTILE—I move that the Secretary be instructed to cast the unanimous ballot of this association for Mr. O. P. Scott for Secretary.

Mr. FRENCH—I want to ask if any other nominations can be made?

The *President*—The nominations were closed. They can only be opened by a vote of the Convention.

Dr. ELLIOTT—I move that the nominations be reopened, as Mr. Stein has declined to be a candidate.

Upon a rising vote the motion was lost.

The question being upon the motion of Mr. Gentile, was then put and carried.

The *President* then invited Mr. Scott to the platform and introduced him as Secretary for the ensuing year.

Mr. SCOTT—*Ladies and Gentlemen:* The most that I can say at present is that I heartily thank you for the high compliment that you have paid me.

The *President*—The next and last officer to be elected is the Treasurer. The committee have nominated Mr. G. M. Carlisle, of Providence, R. I. Are there any further nominations?

Mr. W. H. H. CLARK—I move that the Secretary be instructed to cast the unanimous vote of this association for Mr. Carlisle.

Motion seconded by several and unanimously carried.

The *President*—That closes the election of officers.

Mr. LANDY—I have a communication from Mr. Cramer, in response to the dispatch sent him a day or two ago.

[DISPATCH.]

To the Photographers' Association.
Committee:

Your telegram received. Please tender my sincere thanks for the expressions of kindness and sympathy towards me. I feel much strengthened by the good wishes and kind words, and am steadily recovering. Hoping to meet you all again in Boston, I am forever,

Yours fraternally,
G. CRAMER.

Mr. GENTILE—I received a communication from Mr. Joshus Smith, in which he requests me to tender his regards to the association. He is building a house in Michigan, and as he is his own architect he cannot get away.

(*To be continued.*)

* * *

OWING to the crowded condition of our pages the columns of "What our friends would like to know" are unavoidably left over till the next issue.—EDS.

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ANTHONY'S

Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

SEPTEMBER 8, 1888. Vol. XIX.—No. 17.

THE "HIAWATHA" PICTURES.

QUITE a number of photographers had the ambition to compete for the Blair Cup at the Minneapolis Exhibition, and the collection of pictures was quite interesting and well worthy of study.

Mr. James Landy, of Cincinnati, to whom the cup was awarded, had a most beautiful piece of work illustrating the lines :

> "Suddenly from out the woodland
> Hiawatha stood before them."

The picture represents a number of Indian wigwams, with one large one in the left front, beside the door of which sits the old arrow-maker and the beautiful Minnehaha. A little to the right of these stands Hiawatha just emerging from the woodland, a dead deer on the ground behind him, as an evidence of the chase. The action in the figure of Hiawatha, the surprise in the face of Minnehaha, and the dark look of suspicion on the face of the old arrow-maker are all finely caught, and evidences of the great study put upon this picture by Mr. Landy. Not only the wonderful expressions on the faces of the subjects, but the great care in the selection of the objects accessory to the scene, the birch-bark canoe, the Indian baskets, the pipe, the beaded dresses of the subjects, the wigwam, and the splendid view of the cluster of wigwams in the distance, all go to make a picture of marvelous beauty. Nevertheless, all these might be present in a picture, and yet it would lack the poetic feeling it was intended to express, and this is where the skill of the artist is especially notable in the picture. There is no doubt that the treatment of the subject by Mr. Landy was very much ahead of those of his competitors.

In spite of the grand piece of work just noticed, there was one other exhibit in competition for the Blair Cup that was exceedingly well conceived and is worth more than a passing word ; we refer to the picture of Monfort & Hill, which received a Diploma of Merit from the judges for the excellence of the composition.

The scene represented is where old Nokomis urges Hiawatha to revenge upon the Great Pearl Feather, who killed her father :

> "Take your bow, O Hiawatha,
> Take your arrows, jasper headed;
> Take your war club, Puggawangun,
> And avenge my father's murder."

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The expression upon the faces were very well caught, the imploring look upon the Indian woman, and the emotion in the face of the tall brave, being masterpieces of their kind. Yet there was not the work in this picture that was so evident when looking at the exhibit mentioned above. With such excellent ideas, it is a pity that the artists did not go further.

C. H. Stoddard, of Erie, Penn., had a picture illustrating the lines:

> "From the wigwam he departed,
> Leading with him Laughing Water;
> Hand in hand they went together,
> Through the woodland and the meadow."

This is the scene where Minnehaha leaves the old arrow-maker, and he stands lonely at the door of his wigwam. The subject was very well managed, and contained much poetical feeling.

S. L. Stein, of Milwaukee, took "the death of Minnehaha" as the subject for his picture, and although it was well managed, we cannot say that we liked the selection; there are too many bright phases of Longfellow's story, to select one so dismal.

The other pictures were "The Chilhood of Minnehaha," by Rassmussen, of Rock Island, Ill. "The Death of Minnehaha," by J. C. Strauss, of St. Louis. "The Appearance of Hiawatha from out the Woodlands," by M. F. Phelps, of Hamburg, Ia. "The Welcome of Minnehaha to Hiawatha," by Ernest Krueger, of Ann Arbor, Mich. And "They went together through the woodland and the meadows," by George B. Wood, of Philadelphia.

The more important pictures we have noted; the others were not lacking in merit, but they were very far behind the two exhibits that received the commendation of the judges and the coveted prize; our space will not allow us to go into further details.

EDITORIAL NOTES.

From Professor W. H. Pickering we have received reports of observations on the total eclipse of the sun at the Island of Grenada, West Indies, and also of the total eclipse of the moon, January twenty-eighth last. They are full of interesting observations in scientific photography, and we are sorry that we cannot enter more into details about them. The photometric and spectroscopic work during the sun's eclipse is highly interesting and should be read by all those working in this domain of astronomy. As usual with all the work from the Harvard Observatory, these monographs are well illustrated.

Steps are being taken for the formation of a Society of Amateur and Professional Photographers of Italy. Already a large number of photographers of Florence and other Italian cities have promised their assistance, and, judging from the success of the recent Italian Photographic Exposition held at Florence, we believe that the society will aid not only in the improvement of the work of its members, but as well in the advancement of photographic science in general.

The provisional address of the society is with Cav. Anselmo Anghinelli, Piazza S. M. Novella, No. 11, Florence, Italy.

Mr. James Landy, the well-known Cincinnati photographer, and the honored winner of the Blair Prize Cup, recently celebrated the twenty-fifth anniversary of his marriage at his home at Walnut Hills, in that city. Not only did his callers bring smiles and congratulations, but numerous other evidences of the high regard they entertained for their honored friend. May he yet live to see another quarter of a century and more of married life, and when the final parting arrives be

"Like one who wraps the drapery of his couch
About him, and lies down to pleasant dreams."

THERE was recently shown at the photographic club in London two ancient glass lenses discovered by Mr. Flinders Petrie at Tanis, Lower Egypt. One is as old as A.D. 160 and the other A.D. 200, and are supposed to have been used for illuminating purposes. From this it is evident that glass and its manufacture and use were known at those times, a fact not hitherto believed.

FROM Montignani, the Bridgeport photographer, we have received some instantaneous views that deserve more than a passing notice. These are some of the most perfect pictures of the line of Barnum's circus procession that we have ever seen. The wonderful detail in both foreground and distance, in the animals (elephants particularly), and also in the various costumes of the attendants, speaks well for the skill of the artist who made them. It always gives us pleasure to see such good work.

FROM W. C. Paul, of Milwaukee, Wis., we have received four handsome pictures, photo-mechanical reproductions of Stein's Prize Photographs at the Minneapolis Exhibition. They are very finely executed and excellent reproductions of the beautiful originals. The titles of the pictures are "The Dancing Girl," "Nubian Fruit Seller," "The Song of the Slave" and "Maud Muller." All the compositions of Mr. Stein were of the highest order of photographic study, and these fac-similes are worthy of them.

THE first meeting of the Fall and Winter season of the Photographic Section of the Manhattan Chapter of the Agassiz Association, will be held at 103 Lexington avenue, New York City, on Friday evening, September 21st. The subject announced for discussion is, "The Scope of Photography," and all persons interested in the science are invited to be present.

FROM D. J. Wingfield, of Cape Vincent, N. Y., we have received a couple of cabinet photographs of a little child, that are very well done; good modeling and a pretty child-like pose being the chief characteristics. E. J. Foss, of Malden, Mass., sends us two excellent portraits of Mrs. Cox, of that city, taken in her own parlor, a few hours after celebrating her one hundredth birthday. They are uncommonly fine photographs of a very interesting subject, and a valuable addition to our portfolio. Another interesting picture comes from H. R. Ross. This is a view of a Nebraska cattle ranch, taken with a single view lens (E. A.), and drop shutter exposure. We must confess that there are few better pictures of these subjects. We shall be glad to see more of Mr. Ross' work. Fritz, of

Lambertville, sends us a pretty cabinet of a baby, sharp, clean and an excellent photograph. While from Keyser, of Belle Plain, Iowa, we have two good cabinets and an interesting view of a spouting artesian well.

◆

[*From Photographisches Wochenblatt.*]

THE COLORS IN PHOTOGRAPHY.

BY F. STOLZE.

If we attempt to approach the ideal of a photograph, the production of a picture resembling nature not only with regard to light and shade, but also with reference to color, we have to come to an understanding first about the character of the colors and the present means of photography for this purpose.

Although the colors correspond with certain external processes in nature, there is also no doubt that color as such is nothing objective, but a subjective sensation, based upon the peculiar irritation of the visual nerves by those external proceedings. We can therefore only hope to produce a picture in natural colors, when we are enabled to reproduce upon the same the proceedings which furnish to us the color impression.

If a sunbeam passes through the small vertical slit of a blind into a dark room and from there through a prism whose edges are parallel with the slit, the picture of the same by virtue of the refraction of light in the prism will be seen on a screen placed opposite, removed towards one side and extended in width, and it will show in this same direction near one another the colors red, orange, yellow, green, blue, indigo and violet. The spectrum so produced is, however, not a pure one; the sun having a measurable diameter, the picture of the slit would appear much wider upon the screen than the size of the latter, without a prism; it is therefore easily comprehensible that a diffusion of colors is effected by the prism, but that the colors thereby will partly fall one upon another.

There are different means to remove this defect; the most simple, although not most complete, one is to let the stream of light fixed through a heliostat pass two small slits placed not too near together. If the spectrum is now caught upon a screen the colors will appear denser and less white with equal strength of light (by regulation of the slit width); but besides that, the spectrum is cut by a number of dark lines, parallel to the producing slit, which are known under the name of Fraunhofer lines, and of which the most remarkable ones, beginning with red, are designated with the letters *A* to *H*.

Of these lines *A* is nearest to the direct broken-up prolongation of the producing stream of light, while each subsequent letter increases the distance. The red light has therefore the least, and the violet light the greatest, refraction; the other colors are between. The changes in the refraction of the light are thereby just as gradual as those in the color, and only where a dark line cuts through the spectrum the light is wanting of the corresponding refraction.

If an opaque diaphragm is now passed from the red side between prism and spectrum, gradually covering the spectrum, one will see, as soon as the last part of the heretofore visible violet is cut off, under certain circumstances beyond the same, a long continuation of the spectrum of a bluish-gray color, which is also cut by vertical lines designated with the letters *L* to *R*. The "ultra-violet" light is therefore so weak that it is not visible to our eye, or only when all other light is excluded; or if by fluorescing matter it is changed to light of very little refraction; it exists further by not continuing in the consecutive number of colors; because purple, which is wanting in the spectrum, should show itself here; instead of that the ultra-violet light has an indigo color, or, if lighter, a bluish-gray tone, which is designated by the name of lavender-blue.

On the other side of the spectrum a continuation of the same can also be made visible with proper diaphragms, which, however, is proportionately short. Its color is a pure red of very weak intensity, called brick-red.

If a photograph of this spectrum is taken, instead of making the observation with the naked eye, it will be found that the photographic intensity of the refracted rays differ widely from its optical intensity. While the lightest part of the spectrum for the eye is in yellow, and indigo blue and violet appear proportionately dark and ultra violet becomes only visible by application of diaphragms, the principal intensity of the photographic spectrum will be just in those three latter colors, also in cyan blue, while the other colors show only after a longer exposure or with specially prepared color sensitive films. And here we have again a very remarkable phenomenon, viz.: while for the eye the spectrum closes under all circumstances with the brick-red light (even if rock-salt prisms are applied), photography is capable to extend the spectrum also in the direction of the less refractive rays. This is oftentimes called the "ultra-red light," although ultra-red rays or an ultra-red part of the spectrum would be a more correct expression. All these phenomena demonstrate distinctly how thoroughly "subjective" the definition of "light" is to be taken. There are no rays of light, except those which appear to the eye as such. This does not say that they may possess many other properties, and indeed, they are the cause of many chemical changes (photography), they give heat (thereby expansion), in short they fulfill a large number of purposes in the household of nature, of which that known as "action of light" is only one. At the same time we recognize another fact: those ultra-red rays, which are disclosed by photography, correspond exactly with the part of the heat spectrum laying outside of the light spectrum. We see, therefore, that photography gives us knowledge of rays of heat and rays of light as phenomena of one process; but it shows also at the same time how little of the nature of this process is disclosed by the light. The rays acting most powerful chemically have very little optical intensity.

(*To be continued.*)

PHOSPHORESCENT PHOTOGRAPHS.

BY P. C. DUCHOCHOIS.

THERE is no substance which escapes the action of the physical forces, this action causing a disturbance in the particles of the substance, which being set in a more active vibratory motion, are dissociated or transmit perceptably or imperceptibly to our means of observation the mode of action imparted to them, either in the form it has acted or in some other transformations of the initial force, motion.

Amongst the phenomena which result thereof, the most interesting, perhaps, is phosphorescent. In this case no chemical change occurs, but the substance absorbs the energy of the calorific and luminous vibrations, which it radiates afterwards as heat and light in an attenuated form, but sometimes still capable of impressing the silver salts. Hence, if a layer of such a substance be exposed under a transparency to the action of the sun's light, or to that emitted by magnesium in incandesence, it will radiate light from the parts acted on to the exclusion of the others, and consequently a phosphorescent photographic image will be produced which, of course, can be seen only in the dark. Many substances possess this property. Amongst them we will cite the sulphides of strontium, calcium and barium—in which latter the phenomenon was for the first time observed in 1604, calcium chloride, calcium phosphate, fluor-spar, indurated limestone, rock crystals, yellow amber, diamond which possesses also the curious property to become of a fine yellow tint when heated, and to so remain for many days without having suffered any alteration whatever. All these substances should be well desiccated, or calcined, when they can stand a high temperature, and kept in darkness for a certain period before experimenting with them.

The phosphorescent light, its intensity and duration is not the same with every substance, and even varies according to the mode of preparation of the substance itself and the manner it is impressed; thus: calcium sulphide prepared by the action of potassium persulphide on marble, calc spar, chalk or lime emits after insolation, either an orange-yellow, green-yellow or violet light, and what is most remarkable, whatever be the refrangibility of the rays which have impressed the substance, the rays emitted are always of a less refrangibility; for example: the violet rays may give rise to an indigo light, the blue rays to a green one, and the indigo to a blue or green light: the ultra-violet rays, which are invisible, may be transformed into a blue light, but if the substance be impressed by the red rays at the end of the spectrum, only the calorific rays, which are invisible, are given off.

The temperature of the substance has also a great influence on the phosphorescent phenomenon; thus strontium sulphide heated to 68 degrees F. emits a blue light, at 104 degrees the light is blue, and becomes yellow at 212 degrees.

Generally at common temperatures the light is green or blue, with strontium sulphide—bright green, yellow or orange with barium sulphide—red at first, then white with rock-crystals—green with calcined fluor-spar (chlorophane), etc.

The most phosphorescent substances are the sulphides of barium, calcium and strontium. The duration of the light has been obseved for a period of thirty hours in the two latter compounds. Chlorophane also remains phosphorescent for some hours.

The sulphide of barium is usually termed the phosphorus of *Bologna*—that of calcium, phosphorus of Canton. The phosphorus of Homberg is the chloride of calcium, the nitrate of the same metal constitutes the phosphorus of *Baldwin.*

These two latter salts being very deliquescent, are not well adapted to obtain phosphorescent photographs. The phosphorous of Canton, which is one of the constituents of the luminous paint, being little soluble, should be selected for experimenting. It is prepared by calcining in a well-covered crucible, two parts of calcium carbonate (chalk), or three parts of powdered oyster shells—intimately mixed with one part of the flowers of sulphur until the excess of the latter be eliminated, which requires from thirty to forty-five minutes. The other sulphides are prepared in the same manner, using the carbonate of the metals mixed with half its weight of sulphur. When the chemical action is over, the crucible is allowed to cool down and the sulphide finely pulverized whilst still warm and preserved in well-stoppered vials in the dark.

To prepare the phosphorescent film, a thick coating of the substance is applied on a sheet of paper with gum arabic. Other means can be devised by the photographer; thus a sheet of albumen paper may be placed between damp blotting papers and when the albumen is softened and gluey the substance is dusted over, and to secure adherence, gently pressed into contact with a pad of cotton, when the excess is removed with a camel hair brush. This method is not, however, recommended, for only a thin film of the substance is obtained, and consequently the phosphorescent light is feeble and of little duration. Whatever be the method employed, the paper should be well dried before a fire, and kept in a dry place sheltered from the influence of dampness, air and light for a certain period before use; the reason is obvious. It is then placed on a transparency and exposed for an instant to sunshine, or to the magnesium flash light, when in the dark a luminous image of the most singular effect will appear, and if different sulphides were side by side applied on the paper, various colored lights would be emitted, and the phenomenon more astonishing.

Another method to obtain phosphorescent photographs consists in preparing a plate glass as for the dusting process, and after exposure under a slide to apply the substance, which then adheres only on the parts which remain hygroscopic.

The persistence of the phosphorescent light varies according to certain causes which have been explained, but when the energy is exhausted the substance can again be impressed and produce the same effects. However, the sulphides being transformed into sulphates by the atmospheric oxygen, and therefore slowly losing the property of becoming phosphorescent, the film should be protected by some substance which isolates it from immediate contact with the air. A coating of plain colodion, prepared with castor oil or parafine, is the best medium at the disposition of photographers to prevent for a long time their alteration, provided other precautions which suggest themselves are taken.

Although this curious process is not susceptible of useful applications, and should be considered as a photographic recreation, it is nevertheless suggestive to those who are interested on the action of light on matter and specially on the silver compounds employed in photography.

PHOTOGRAPHING ANIMALS IN MOTION.

BY MAX BÖLTE.

Professional photographers are often called to photograph a horse, a pet dog, groups of cattle, etc., and although this class of subjects require special apparatus and peculiar skill, it nevertheless frequently happens that very acceptable results are obtained. Amateurs often try their skill at this class of work, and even if they do not mention how many failures they had before they succeeded in getting only one good negative, we comparatively often hear of good work done by them.

At all events it is an admitted fact, that photographing animals is not so easy as generally supposed, and it is much more difficult than to take a landscape or seascape view, and even more difficult than to take a maritime view. To photograph an animal, for instance, a horse or a setter-dog, offers its difficulties, for even if they obey a word of command, it must be borne in mind that they are only animals, and that their understanding is not that of a man, and besides, what do they care, to be photographed to the best advantage? Anyone who has ever tried to photograph cows will have noticed that they become uneasy as soon as the photographer approaches with his camera and focussing-cloth, etc. Nevertheless, these animals can be photographed with comparative ease, and it is only necessary to take them with a detective camera.

To photograph a horse jumping over a fence, or a setter-dog pointing, may also be accomplished in the same way, and when a detective camera is used, the difficulties are not nearly so great as when a camera resting upon a tripod is used.

In all these cases the photographer can secure a sharp focus, can draw the slide from his plate holder, and watch the proper moment to take his shot.

Of course, in order to produce a good photograph of such a subject, it is not only necessary to have a rapid lens, a fast shutter and a highly sensitive plate, but it also is necessary to have some knowledge of the laws of painting, and chiaro-oscuro, that is, the contrasts of light and shade. When the animal is light-colored or even white, it is highly advantageous to select a dark background (for instance, dark-green bushes), and *vice versa*, and always do the best to get the animal as well lighted up by the sun as possible. Many exposures are given either too soon or too late, that is, the photographer presses the bulb of his pneumatic shutter release at not the proper moment, and here is the great point which requires not only study, but also practice and calmness. A finder attached to the front board of the camera is a great help, however; there is no absolute necessity for it if the photographer is well accustomed to his apparatus, and has made certain marks on the camera, back and front, as for instance, a little screw projecting ¼-inch on the front board, and another screw on the upper back of the camera, this latter screw covered by a semicircle of brass of about ¾-inch diameter. This latter contrivance is peculiarly useful when resting the camera upon the left shoulder and supporting the front of it by the left hand or elbow.

I do not pretend that this way of holding the camera is the only appropriate one, for there are many photographers, who have adopted other styles, but I personally have found it in practice to be the most handy and agreeable one. My way of proceeding is to close the shutter, draw the slide of the plate-holder, and allow the camera to point vertically. I now walk on and watch the animal as well as the distance, and when up to the point, I slide the camera to the corresponding focus mark on the lid of the camera, raise same to a horizontal position, resting it as above-mentioned upon arm and shoulder, and take aim, and at the right moment press the bulb of the pneumatic release.

Now as regards the most convenient outfit for this class of work. The first requisite is a good lens of the rapid rectilinear style; and if possible a lens with a good deal of so-called depth of focus should be choosen, for no matter how expert one becomes in estimating the distances, he never will guess it right up to the margin which a lens of very little depth of focus admits. The further explanations which I shall give, will give a clearer description of the foregoing assertion. The camera should be not too large; up to eight by ten is all that can be handled with satisfaction. The focussing adjustment should not be of the rack and pinion movement, but should allow the camera to slide easily upon its bed. It is a good dodge to take the camera from its bed and apply to all parts which are movable, some graphite; the same should be done with the slides of the holders. In selecting a rapid shutter it is good to ascertain that it works as fast as one-fiftieth of a second, that it is free from vibration and absolutely light-tight, and furthermore, that it has a pneumatic release. When all things are in readiness, the camera and shutter should be submitted to a serious examination in broad sun-light, in order to discover any leaks or imperfections, for as highly sensitive plates will be used, and as it often may happen that the slide of the holder is drawn some time (often longer than expected) before the exposure is made, the most diminutive imperfection or leak would cause trouble and fog the plate. The examination of the lens with regard to its depth of focus, angle of view, etc., should be made in the well-known way. Next, the marking of the different focus distances upon the camera bed should be made. An efficient way is the following: A large portrait, one of life-size or one even still larger, is tacked to an easel or a wall, using a plumb line to insure its vertical position, and to be marked upon the ground, the following distances are measured out: 125, 75, 60, 50, 35, 20, 15, 10 and 5 feet. The camera is placed upon its tripod, and a plumb line is hung from the diaphragm of the lens. The next is to bring the camera to the distance of 125 feet from the easel to the plumb line of diaphragm of lens, and having a small piece of white celluloid or ivory of about 4 x $\frac{3}{4}$ inches ready; this piece is placed in a convenient position upon the bed of the camera (by preference to the left), and is held there in position by means of a screw. The focus is now taken as sharp as possible. It is even advisable to use a magnifying glass for this and all the other focus markings. There should be a little rule or an index attached to the camera and in such a way as to indicate the position of the camera upon the celluloid strip, and all corresponding markings should be made by this index upon the celluloid plate. All the different focus marks are marked upon the plate referred to. Upon examination of the celluloid plate, it will be seen that there is not a great difference between the focus marks for 125 to 60 feet, but that the distances from 60 down to 5 feet increase in an extraordinary way. The different markings, in order to render them more apparent, should be marked in black, and in placing the corresponding numbers of feet always in alternation, that is, one number to the right and the next to the left, and so on, for this way of marking allows of employing larger numbers, and it is easier seen whilst sliding the camera when working afterwards.

There is still another precaution to which I will call attention, and that is the use of a cover for the camera. A bag made of yellow or red and black twill, made in such a way as to allow the placing and withdrawing of the holder and its slide is a great advantage, for it protects the camera and allows of withdrawing and reinserting the slides with not such extraordinary care as without this cover.

Many of us have heard of or have seen the excellent photographs of animals which Ottomar Anschütz, of Lissa, produces; and it is only too natural that these rare specimens of perfection should awaken the desire of many an amateur to "*go in*" for this class of work.

True, Anschütz's photographs are so far unrivalled by anyone, but it must be borne in mind that Anschütz neither is an amateur nor an every-day photographer, for he is an artist who has studied many a year and who is gifted not only with unusual practical skill, but also with artistic feeling, and, unfortunately, this latter quality is not obtainable in any drug store or at photo stock-dealers. The proceeding which Anschütz employes is a peculiar one, which nothing but experience and observation of nature have shown him.

Those photographs of foxes, deers, cats, monkeys, etc., it must be understood, are not the result of the first attempt; oh, no! who knows how many days he has kept them company—how many long hours he has been watchful and patient? It furthermore is evident that those animals were taken whilst they were under the impression that no observer was present. The human eye has a peculiar power over any animal, and none of them can bear a steady look for even a few seconds only. In many cases it is good to leave the camera readily focussed, with the slide drawn, and go away from the animals to a hiding place, to which the rubber tube of the shutter has been conducted (or even electrical releases are employed), and from this place watch the animals, only releasing the shutter when the animals are at ease and in the desired position, etc. It is easier to photograph animals which are in cages, for there they are not at liberty to move much, and we can approach without fear, not so much for us as for fear to disturb them, for those animals, as kept in menageries and zoological gardens, in a certain way, have got accustomed to the presence of men, and, as a great observer of animal life, said, "they are no more the genuine tiger, lion or monkey they were when still at liberty." This is what Ottomar Anschütz aims to avoid, and if he has mastered it must be left to any one to judge who sees his admirable photographs.

A detective camera, having no bright and shining brass parts, under all circumstancces is the most convenient for taking such photos, and a good plan is to take the animals as much unawares as possible.

Furthermore, it is good not to try to take the animals at too short range, for even if the image will be larger upon the plate, there will be less details in it. The law of the reflected rays should be borne in mind. An instantaneous picture, taken at 15 feet distance, will not yield such a fine plate as a sharply focussed plate taken at 30 feet. Detective cameras generally are made with a focussing adjustment, but they have no swing-backs, and it is easy to tell if a picture has been taken with a detective camera or not.

The reason why I recommend the use of a camera with sliding. focussing adjustment is the consequence of a late experience, when I was called upon to take views of rapidly moving animals. Other photographers had tried to get views of these animals, but the result, compared to the great quantity of plates spoiled, time and labor lost, was by no means encouraging. My own apparatus was not ready, and I consequently had to work with an outfit perfectly strange to me, and which furthermore had the great inconvenience of a rack and pinion movement, paper dry-plate-holders, and a lens without any depth of focus. The result of twelve plates was eight plates light-struck, one plate a blurr and three pretty sharp negatives, which, however, showed the animals rather small. After this experience I rigged my apparatus, constructed a drop shutter moving upwards by means of a pretty powerful spring, and the result was of eleven plates I got nine good ones. The animals, horses, riders, etc., were all taken whilst moving at full speed, some at 100, others 60, and others 35 and even only at 8 feet distance, and under these circumstances it was that the sliding motion of the camera and the focussing marks proved to be the desideratum.

The question was to take shots at those rapidly moving animals whilst they offered the most striking poses, and the changing of plates had to be done in a great hurry in order to be ready as soon as possible to take another shot. The camera, as soon as the slide was drawn, was shouldered, the right hand holding the bulb of the release and governing the back of the camera to bring it to the corresponding focus and pifft—take the shot! I had to work in this style which, of course, is open to many an objection. If I could have had my way, I would have proceeded as follows: I would have adopted Mr. Anschütz's *modus operandi, i. e.*, I would have measured out upon the track which those moving animals had to run over, certain distances, placing chalk in powder or whitewashed stones at the corresponding places, and with the camera ready would have taken only such shots for which preparations as mentioned had been made, that is, releasing the shutter the very moment that the moving objects passed the corresponding spot. As the performance was repeated every afternoon in the same order, I would have divided the shots to be taken in accordance with these features, which I had observed, and in this way the work would have been not only much easier, but also have given better results. It is in this way that Anschütz has succeeded in securing those splendid scenes of the cavalry maneuvres which are admired by everybody.

Now a word about the development of instantaneously-exposed plates. The best plan is to give the plates before development a preliminary bath of carbonate of soda $\frac{2}{3}$ and carbonate of potash $\frac{1}{3}$ — at the strengh of 5 per cent. and for at least two minutes, and without washing place them in the developing tray and start development with a rather diluted developer containing a greater proportion of pyro than alkali. As the development will be slow some patience is required, and a cover for the tray should not be forgotten, for if the plate is not to be covered it might get light-struck whilst exposed to the lamp and the development going on. When the details are pretty well out, a larger quantity of pyro may be applied in order to bring out density.

Some plates stand more bromide than others, but all instantaneously-exposed plates require a good dose of bromide of brains, and I sincerely advise everybody to use this stuff as freely as possible, and if combined with a good dose of bromide of patience, so much the better for him and his work.

THE FOREIGN PICTURES AT MINNEAPOLIS.

The foreign pictures at the Minneapolis Convention were fully up to those of former years, and, in some cases, more interesting and unique. The exhibitors were: F. Ganz, of Brussels; Fritz Einlender, of Cologne; G. Reutlinger, of Paris; Albert Meyer, of Berlin; E. Rebending (A. Marn), of Frankfort.

The exhibit of F. Ganz consisted of twelve cabinets, which were remarkable for their softness, excellent modeling, and the thorough life-like posing of the subjects. We did not note any very striking pictures in this collection, but we were delighted with the generally fine work of the whole exhibit, especially the children's portraits.

Fritz Einlender did not exhibit any pictures at the Chicago convention, and we were very glad to see some of his work again at Minneapolis. The collection consisted of eight pictures only, but they were gems of the highest grade of photographic work. Four of the pictures were fourteen by twenty-two inches, and the others were eight by twelve.

They were notable for fine modeling, exquisite detail, and the brownish toning that is so rich and gives such a pleasing finish to all the German pictures. The most interesting subjects in this exhibit were "Mignon," a most beautiful piece of composition full of poetic feeling; a full length figure of a lady, with some excellent photographic work in the lighting of the whole figure and especially the drapery; a full length figure of a little girl, overflowing with child-like action and grace; and last but not least, a grand three-quarter portrait of Fritz Einlinder himself. This last was particularly interesting, as we always like to see those who give us pleasure, either in person or through their portraits. Fritz Einlender is a man in the prime of life, with long hair flowing over the back and shoulders, with a face that is impressive from its intellectual and poetic expression, indeed just the student artist we have always taken him to be. The pictures of this artist are always masterpieces, and those sent to Minneapolis were no exception to this rule.

G. Reutlinger, of Paris, has not made an exhibit at the American Conventions for some years, and the pictures shown at Minneapolis were some of the most interesting and difficult pieces of composition we have ever seen in photography. These compositions were largely made up of the actions of cats and kittens. One entitled "Au clair de la lune," was a very comical one and very well caught. Another "Comment sortir," a kitten in a glass funnel placed in a bottle, was a very a humorous little sketch and amused everyone that saw it. "Au Guet," a kitten and a fly, was another smile-provoking little gem. "Quel Supplie," was a dog with a piece of sugar on his nose, and the little fellow looked as if he enjoyed having his picture taken under such circumstances.

Albert Meyer, of Berlin, exhibited one large panel and a number of cabinets that were notable for the truly artistic posing of the figures and groups, and the beautiful modeling found in every picture. The large panel was a lady in a snow storm, that was a very perfect piece of photographic work, and the cabinets consisted of children's portraits, groups of heads and full figures that were full of life and character. The children were particularly interesting ; one, a little child in a chair, semi-nude, was a gem of its kind, the modeling being very good ; two ladies' heads was also a capital study in this kind of posing ; and an oriental water-carrier was another fine piece of full-length figure posing, with much artistic feeling. Altogether the exhibit was a remarkably fine one, and worthy of the closest study.

E. Rebending (A. Marn), had four panel pictures, six by nine inches, and a number of cabinets. The most interesting of the six by nine pictures were two groups of three Bavarian hunters drinking beer. These were as near perfect as photography could make them. Fine modeling, artistic posing, and perfect photographic manipulation made these pictures life-like and full of the spirit of the scenes they represented. The picturesque costumes, the perfection of the expressions on the faces, and the wonderful action of conviviality, all went to make the photographs some of the most admirable studies we have seen.

Of the smaller pictures of the exhibit, the comical ones of children were the best ; full of fun and childlike frolic, they had many admirers. But all these cabinets were gems and full of the finest artistic work.

Altogether the foreign exhibit at Minneapolis was an extremely interesting one and worthy of the eminent men who took part in it. We hope they will all send us exhibits again for the Jubilee Convention at Boston, when we celebrate the semi-centennial of the discovery of the daguerreotype.

PHOTOGRAPHY AND ART.*

[Read at Chautauqua on the Photographic Day.]

BY ERNEST KNAUFFT.

THE rapid progress made in photography during the past quarter of a century has been something marvelous, and the excellent results produced by the camera to-day have led many to suppose that there was a possibility of its interfering materially with the profession of the painter and draughtsman.

But the contrary is the case. The more perfect the work of the camera becomes, the more perfectly will the public be made to understand nature, and especially the shadows in nature. This will cultivate the public taste so that they will be ready to receive the highest forms of art in the future. Because the less a nation knows about nature, the less capable are they to appreciate art.

At present the camera does not reproduce in its monochrome the colors of objects in exactly the true relation to each other—in what the painter calls their true values. But every day in the art we see less and less of this short-coming. The splendid effects gotten by Mr. Kurtz, of New York City, by his orthochromatic process in photographing paintings so that the color of the objects in the picture are represented in true relation to each other (that is to say, a blue sky comes out not totally white, as used to be the case in old photographs, and yellow objects made light, and not black, as formerly), is indeed encouraging.

The true painter hails with delight these improvements in the art, because every good picture produced, whether by human or mechanical aid, is a new cultivating instrument with the public.

The more the shadows in the human face are looked for by the ordinary person, the better for the artist, as it is his perfect delight to paint as Rembrandt did, the head half in the mystery of shadow, and not as Queen Elizabeth always ordered her likeness to be made, totally without shadow.

The photographer is generally trusted more fully than the human artist; and when a person sees a photograph which does not look like the original, he is apt to be a little less critical at first than if a painter had made the portrait. The photograph sets him to thinking what it really is which makes the face of his friend or his child. And it is a great thing when people are set to thinking as to what it is which causes the impression which their minds have of certain things.

There were two families in New York who were happy in the possession of a baby—that is to say, each family had its baby, about a year old. For some reason or other, it occurred to both families at about the same time to have photographs taken of their respective infants. Without either knowing it, they went to the same photographer.

In due course of time one of these families received the proofs from the photographer. All crowded around to see them. They were handed about, criticised and admired, a favorite one selected, which was pronounced "just too sweet for anything," and it was about to be put in an envelope and returned to the photographer, when the nurse asked to see it again, and, looking at it a moment, raised a doubt as to the dress represented on this baby being identical with that worn by their cherub the day of the operation. Sure enough, all now said it was not right. And in a few moments it was discovered that the proofs for the family up the street had been sent instead of the right ones.

This only shows how limited the knowledge really is which some persons have of the human face. Show some one a photograph of some natural scene which they are not very familiar with, and where are no definite landmarks, and how often they are unable to tell you just exactly what spot it represents. They know the general character of the scene, but cannot tell you where is the east or the west. Let photographs show how much there is to observe in a landscape, and it does the artist a great service. Then, again, in making views of vast tracts of land which are not wholly picturesque, not enough so as to tempt the great painters, yet which are very interesting to the traveler and scientific student. In giving us correct reproduction of such country it serves us greatly.

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* We are indebted to Prof. Charles Ehrmann for advance proofs of this Paper.

In architectural views, in the rendering of shadows as they are on all parts of the building at the same time, photography does much more than the artist when he gives us in a painting, perhaps the morning shadows on one part of the building and the afternoon shadows in another.

In the stereopticon views which photography has enabled lecturers to use, photography has again done us good service, because it makes these lectures much more graphic, as every one knows, and saves a great deal of explanation and describing.

In photogravure, photography has permitted us to reproduce paintings at a much less cost than was formerly possible in engraving and etching.

In photographs of monuments, again, photography has almost taken the place of the draughtsman's work. And while some few artists are thus put out of employment, yet, as this is a much more certain method than free-hand drawing, the artist will not complain, because, on the other hand, it permits scholars to study archæology more thoroughly, and the study of archæology always leads to the consideration, at least, if not the study, of modern art.

In instantaneous photography the camera wonderfully helps the painter in giving the truth as to action in both man and animal in their rapid movements, which they otherwise could not learn without an infinite amount of trouble and patient observation.

In many other ways the art of photography is not an art to be feared by the painter or draughtsman. And least of all will be the perfected art of the future, when photography will give us a truer relation of colors to one another than it does at present.

THE MODERN PRACTICE OF PHOTOGRAPHY.*

BY CHARLES EHRMANN.

[A Lecture delivered at Chautauqua on the Photographers' Day.]

THE period of fifty years from 1838 (when Daguerre announced his discovery) to 1888, embraces the

HISTORY OF PHOTOGRAPHY.

It may be well to review what led to its discovery, and why it has been called "a child of optics and chemistry."

Among the ruins of Nineveh was found a double convex glass lens, which must have been made more than one thousand years before the Christian era. This is the first optical instrument of which we know. Pliny observed that yellow wax began to bleach when exposed to sunlight, and other organic substances were known to change color in light; some of them were noticed to darken while others faded, and of an organic matter the Greeks knew opal to lose its lustre under the influence of sunlight. But no advance towards utilizing these effects was made till the alchemist's search for gold opened the path for modern chemistry by accidental discoveries.

Fabricius noticed, in 1556, the action of sunlight upon silver compounds, and described it publicly, but as further researches seemed to lead him from his search for gold he did not pursue his discoveries. As time progressed, however, advances were rapidly made towards the discovery of the art of depicting objects by the aid of light.

In 1727 T. A. Schultze, a German, covered paper with a mixture of chalk and silver-nitrate, exposed it to light under a sheet of semi-transparent paper, and obtained a reversed or negative copy of it.

When we allow direct sunlight to fall upon similarly prepared paper, and interpose a solid object, the shadow cast by it prevents light from acting, and a reversed silhouette (a white figure upon a black ground) is the result. Thus were made the first photographic portraits.

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* We are indebted to Prof. Charles Ehrmann for advance proofs of this paper.

Highly important discoveries were made by Charles W. Scheele, who was also a German, though at that time (1777) his home, Stralsund, being in the possession of the Swedes, English historians say he was of the latter nation. He found differently colored lights to affect chloride of silver in different degrees of intensity, and stated that silver salt would blacken as much under violet light in fifteen seconds as under red in twenty minutes. He furthermore found the blackening of the silver salt to be caused by its decomposition into elementary substances—chlorine gas and silver. The former escapes, the latter remains in finely divided, metallic form. What Scheele found has been retained as a basis upon which we, in America, have built a theory of photographic printing, although others have frequently stated the result to be of a more complicated nature.

Let us now turn to the work of the Italian philosopher, Baptista Porta, who, about the middle of the sixteenth century, invented the camera-obscura.

The camera-obscura at first consisted simply, as its name implies, of a darkened room, to which light was admitted only through a single small hole in the window-shutter. In such a room, when the sun is shining brightly, a faint inverted image of external objects, as the houses, trees, etc., upon which the window looks, is seen upon the white surface of the wall or screen which faces the window. Porta improved this primitive contrivance by placing a double convex glass lens in the aperture of the shutter, outside which a mirror was placed to receive the rays of light, and reflect them through the lens. The image upon the screen within was thus made brighter and more distinct, and was, moreover, shown in an erect or natural position. Crowds flocked to Porta's house in Naples to see these pictures painted by light, glowing with color, and depicted with marvelous accuracy. Soon further improvements were made, and the camera-obscura became a favorite adjunct to the country houses of the wealthy, often taking the form of a small circular building, erected, if possible, on a hill-top.

With the dawn of the nineteenth century all things were more propitious for the development of scientific matters. The progress made in chemistry enabled Wedgewood and Sir Humphrey Davy to make successful experiments toward photographing. They employed, first, nitrate of silver, but, later on, found chloride of silver to be far more sensitive to light than it, and thus corroborated the results of Scheele. They both formed pictures upon a thin stratum of it by Porta's camera-obscura, but encountered a difficulty which even Sir Humphrey's superior knowledge of chemistry could not surmount. The light, or white, part of the picture obtained continued to be acted upon, and the whole stratum of silver chloride turned black speedily when held in light. A chemical agent to fix the image was wanted. Many media to do this had been proposed, but with all of them objectionable features were encountered, till a soda salt—the hyposulphite—was used. This salt had been first observed by Chassier, in 1799, but was not used for photographic purposes until Sir John Herschel employed it, in 1840.

In the early part of the present century, Joseph Nicephore Niepce experimented in a different direction to attain the same results. He exposed to the light of a camera steel plates coated with a solution of asphaltum, and removed the non-acted-upon fossil rosin by means of essential oils. The method had, at the time of its discovery, but little practical value, but upon it were built highly important photo-mechanical printing methods which are yet in use.

Louis Jacques Mande Daguerre invented a process by which pictures were made in the camera upon iodized silver plates. Niepce tendered him aid and his extensive experience to such a degree that it has remained doubtful to many historians whether the credit of actually accomplishing the feat is not rather due to Niepce than to him whose name it bears.

Daguerreotypes were soon very much improved upon, and we can say without hesitation, that within a very short time American operators became distinguished in this art. With the improvements made, Daguerreotype became of practical and commercial value, and its followers were soon counted by the thousands. Its every impression required a long and tedious operation, however, and a desire to multiply them with ease, and at little expense soon became manifest.

John Fox Talbot then made paper negatives—that is, reversed pictures, positives, and copied from them in any desirable number upon paper. As this had to be done by placing the negative into absolute contact with the positive paper, a glass support became necessary, and the idea to impart light sensitive matter to the glass plate itself was soon suggested. To do this, a variety of carriers were proposed and experimented with, among them being glue, boiled starch, serum, gums, albumen, and, finally, collodion, the two latter being found to work exceedingly well. An albumen process, invented by A. Whipple, of Boston, was, however, soon superseded by the collodion film.

Collodion, a solution of gun-cotton or pyroxyline in ether and alcohol, was first introduced by Maynard, also a Boston man. With it extremely fine and beautiful work has been made, distinguished by unparalleled brilliancy, transparency and general good printing qualities. From the collodion negative was derived the direct positive, ambrotype, ferrotype, or " tintype," as it is vulgarly called.

To better understand my subsequent description of and demonstrations on modern photographic processes, such as we teach in the Chautauqua School of Photography, I have thought it necessary and interesting, perhaps, to many, to introduce the subject with the foregoing brief outline of the history of photography.

We have noticed that a combination of chlorine with silver furnishes a highly light-sensitive substance. Thus we obtain with chlorine, also with iodine, bromine, and fluorine, salts or haloids, which are the basis of all photographic operations. With the Daguerreotype a metallic silver plate was exposed to the vapors of iodine, and thus a sensitive surface was obtained. Fox Talbot proceeded differently to prepare sensitive paper. He impregnated it with a solution of an alkine iodide, and by bringing it into contact with nitrate of silver, formed iodide of silver by double decomposition, which remained upon the paper, while the alkaline nitrate was washed away.

[*Experiment.*—In the solution of gun-cotton in ether-alcohol, which you see here [showing] we have dissolved an alkaline iodide, that of ammonium, and with it a metallic bromide, that of cadmium. With this collodion we coat a perfectly clean glass plate, and when the solvents, ether and alcohol, have nearly all evaporated, plunge it into the sensitizing bath, a solution of nitrate of silver in water, slightly aciduluted with chemically-pure nitric acid. You will perceive that as soon as the clear and transparent collodion film comes into contact with the silver salt, a similar reaction to that you have seen before will take place—the film turns yellowish-white. Iodide of silver and bromide of silver, respectively, is formed on one side, and nitrates of ammonium and cadmium on the other. The former is retained in the film, the others remain dissolved in the bath. The film has become sensitive to light, and is now ready for exposure.]

As time and continuous studies have been instrumental in improving our work, we have also been able to reduce the time of exposure to light. The first Daguerreotypes required as long as thirty minutes. A collodion negative could be made in from fifteen to one second, but with our present mode of working we can make a picture in less than the one-thousandth part of a second. With skill and proper appliances we can depict a projectile in motion, traveling more than sixteen hundred feet per second; we can photograph the least refrangible rays of the spectrum, and total darkness, even, does not prevent us from photographing.

The substance carrying sensitive salts on these glass plates is gelatine [showing]. Not as with the collodion plate do we prepare the sensitive film on the spot, and for immediate use, but we incorporate the sensitive silver haloid with a gelatine solution or emulsify it. The viscosity of the gelatine solution keeps the finely divided precipitate in suspension, and, with proper precautions, is retained there. As bromide of silver is the principal substance contained in our sensitive films, that substance has been named bromide of silver gelatine emulsion.

Emulsification being completed, the mass is either heated for some time to attain high sensitiveness, or digested in alcohol for several days to produce the same results.

After heating or boiling, the emulsion is poured in a cool flat dish, and allowed to turn to a jelly. It is then cut into shreds or fragments with an ivory or bone knife, washed in ice-water to remove all soluble salts still present, reliquified by gentle heat, and finally spread upon glass plates. When dried, these plates are of very high sensitiveness, and are always ready for use; they can be stowed away and kept for an indefinite time.

Emulsion-making and plate-coating are difficult operations, requiring close observance of the different stages through which the preparation passes. A great deal of patience is required, but it is a very fascinating and interesting work.

It is certainly not my intention to show you these operations in all details, but those interested in our school may have the opportunity to pursue the subject further.

When we proceed to make a photograph, we retire first to the dark-room, and insert a sensitive plate into the plate-holder. The camera having been previously placed in proper position toward the object to be taken, focus found, an exposure is made. The plate is not visibly impressed by the action of light, but the exposure results in a latent image, which to bring forth, or develop, is the next work to be performed.

As the Rev. W. H. Burbank has said: To the eye, and even to the microscope, an exposed plate shows nothing to distinguish it from an unexposed one. The developer alone detects the difference, without, however, conveying any information as to the nature of the change.

Notwithstanding much patient investigation, the question of the nature of the latent image is still an unsettled one. The most commonly accepted theory is that a molecular change is produced by the action of the light upon sensitive compounds, the molecules being pulled apart, as it were, and so made less stable.

This molecular change is not supposed to produce any separation of elements, such as occurs when a visible image is formed by the action of light.

The function of a developer is to make this change visible by reducing the silver in those parts acted upon by light to the metallic state.

It has long been a disputed question among photographic savants whether the change produced in a sensitive compound of silver is a physical or a chemical change. Without burdening you with the arguments advanced in support of each of these positions, it may be stated that at present the weight of authority seems to be on the side of a chemical change.

It may be regarded as a tolerably certain fact that under the action of light the haloid salts of silver, that is, the bromide, iodide and chloride, have a tendency, more or less powerful, to return to the metallic state; a tendency which is promoted and made permanent by the action of developers, which are always reducing agents; that is, they are substances which are able to reduce the soluble salts of silver to the metallic state. We may thus take it for granted, for the present at least, that the change of condition produced in the sensitive compounds employed for the production of negatives is a chemical, not a physical reaction.

The proper development of a negative is an art acquired only after long experience and many failures. It cannot be learned from books; it must be acquired at the developing table. The problem to be solved is to bring forth on the exposed surface a reproduction of the original which shall preserve all the varied tones, and be capable of reproducing in the print the impression made by the original.

The picture resulting from developing is a negative; that is to say, those parts of it which appear bright or white in nature are black, and the natural shadows are transparent, while middle tints are represented proportionately. The figures thus obtained remain upon a whitish, opaque ground, which must be removed to obtain a plate of such transparency as to make it a perfect printer. Hence we dissolve the opaqueness from the plate by means of hyposulphite of soda, or remove the silver haloids not acted upon by light and developer. [Here the lecturer showed his audience an unexposed plate, a developed plate, and some fixed plates.]

After copious washing we have now a glass plate upon which still rests the original coat of gelatine, but instead of carrying within its body a sensitive compound, the picture taken is there in the form of metallic silver.

From these negative plates are made positives; that is, we bring paper made light-sensitive with chloride of silver, into absolute contact with the film side to the negative and expose it to light, and thus we produce positive pictures, because, as light cannot pass through the black or opaque parts of the negative, the chloride of silver paper underneath remains white, and the transparent portions of the negative, allowing light to act, produces the shaded or deeper parts of the picture. Wherever the densest opacity exists the paper will remain the whitest, and half tones or middle tints where opacity or transparency exists proportionately.

Photographic prints are made much darker than they should be when finished, because subsequent operations, like coloring them in a solution of gold, and "fixing" them, deprives them somewhat of their density.

The chemical result of positive printing on paper is similar to that of developing a plate to a negative—metallic silver. Through the action of light upon chloride of silver, chlorine is liberated from the compound and metallic silver remains. The amount of chloride of silver not converted into metallic silver remains upon the paper and must be removed with hyposulphite of soda in the same manner as we have dissolved the bromide of silver from the emulsion plate; but before doing this we subject the print to the operation of toning, that is, we give it an agreeable color, from a dark, warm brown to a bluish-black, according to the taste of the operator, and without which it will retain a brick-red tone. This is done with chloride of gold, neutralized with an alkali, or alkaline salt; the result is a substitution of metallic gold for metallic silver, and an agreeable color of the print. [Here the lecturer showed a sample of white unexposed paper, a sample partly printed upon and one fully printed and toned.]

The toned, fixed and well-washed pictures are then mounted upon cardboard and finished. It required just twenty-six operations or manipulations to make a photograph, from taking in hand the sensitive plate till the last finishing touch.

Dry Emulsion Photography has wrought a decided revolution in the art science, and has become a useful adjunct to scientific researches, for with it we have penetrated darkness, and made photographs where light does not exist; we have impressed the least active light (the ultra red of the spectrum) into our service, and have detected heavenly bodies not visible with powerful instruments. We depict animals in motion, and the dust clouds of a tornado rushing rapidly upon us. What half a century ago was out of reach we accomplish now with ease.

It is an earnest occupation, that of the photographer, and to attain to perfection requires as much energetic study as any other branch of science. But there is also much pleasure in it, as many of you can certify. Photography is sober reality, we enjoy nature as it is. We cannot idealize our subjects as the painter or sculptor can, but we can play some tricks, and produce, occasionally, miraculously appearing effects.

To show to you what can be done in this direction, I have only to produce a spirit photograph as it was recently made in a New York court, to prove false the assertion of a notorious swindler. [Here the lecturer made and exhibited a "magic" or spirit photograph.]

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All communications for the columns of the Bulletin *should reach us on Monday preceding the day of issue, to insure their publication at that time.*

PHOTOGRAPHER'S ASSOCIATION OF AMERICA.

EXECUTIVE COMMITTEE.

PRESENT—President Decker; 1st Vice-President, Motes; 2d Vice-President, Guerin; and Secretary Potter.

It is ordered that the medals for improvements, inventions, or discoveries shall be awarded as follows:

George Eastman—one silver medal for Kodak Camera; Otis C. White—one silver medal for ball and socket joint as applied to photographic chair, rest and head screw; C. L. Reutlinger, Paris, France—one silver medal for meritorious photographs; George Eastman—diploma for transferrotypes; W. G. Entrekin—diploma for improvements on burnishers; L. C. Overpeck—diploma for flash-light lamp and apparatus; C. H. Hetherington—diploma for novelties and backgrounds; L. W. Seavey—diploma for artistic design on certificate; The Photo-Gravure Company, New York—diploma for superior work on artificate.

W. H. POTTER,
Secretary.

OUR ILLUSTRATION.

THE handsome pictures of Oscar Suck, of Karlsruhe, which obtained the gold medal at the Chicago Convention, appeared to us to deserve to be seen by a greater number of photographers than was there present. Consequently we had a collection of them copied for the benefit of our subscribers, and in order to obtain the best possible results a number of negatives were made and silver prints used in making the illustration for the BULLETIN, rather than lose any of the beauty of the originals in some photo-mechanical process. The results speak for themselves, and we hope they will prove a *motif* for many a study in the future.

THE FIELD DAY OF THE PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

THE day appointed for this popular gathering of New York photographers turned out to be rainy and disagreeable; consequently the following day, a very perfect one for photographic work, saw quite a number of the devotees of our art gathered at Brighton Beach to fraternize and have a good dinner together. The day was spent taking pictures of the many interesting objects at this delightful summer resort, and at five o'clock about thirty-five members sat down to an excellent dinner at the Brighton Beach Hotel. Among those present we noted Mr. J. B. Gardner, the Vice-President of the Photographic Section; Mr. Stetson, the Secretary of the American Institute, and Mrs. Stetson; O. G. Mason, the Secretary of the Photographic Section; Mrs. O. G. Mason; Mr. Prosch, the well-known shutter manufacturer; Mr. E. B. Barker; Mr. Becker, the veteran photographer; Mr. T. C. Roche, another veteran; Mr. John Carbutt, of Philadelphia, of dry-plate fame; Sargeant C. E. Von Sothen, Mr. W. Irving Adams, of the Scovill Manufacturing Company; Colonel V. M. Wilcox, of the E. & H. T. Anthony Company; Professor Van der Weyde; Mr. Pendleton, President of the Electrical Section of the American Institute; Mr. Wintrigham, the Secretary of the same section; Mr. Grey, the well-known New York photographer; Dr. A. H. Elliott, of the BULLETIN; Mr. Richard Nugent, chief photographer in Julius Bien & Co.'s large lithographic establishment, and others whose names we did not learn.

After announcing that dinner was ready, Mr. J. B. Gardner made the following address:

Ladies and Gentlemen,—Please pardon me for making my little speech at the present moment, as what I wish to say would be, in part, inapropos later in the evening, or after the dinner, and especially if I should thus postpone it, it is possible I might find myself too full for utterance! First, then, I am requested to say that any who desire are perfectly free to order from the bill of fare such things only as best suit their individual taste and inclination, and in any order that may best please their fancy. Believing this would be regarded as a privilege to some present, this announcement is made that all may act in perfect freedom concerning the matter. The waiters have been instructed to ascertain the wishes of all and conform to their individual requests.

As Chairman of the Annual Field-day and Dinner Committee, I have conscientiously worked to make this occasion a pleasant one to all. Hence, purposely avoided the responsibility of replying to any toast, knowing, if I attempted this, there would be one at least who would go away dissatisfied and whose dinner would be muchly curtailed, perhaps, by undue anxiety. From solid selfishness, therefore, I leave this part of the entertainment to others more competent, and who will no doubt be pleased to contribute to the intellectual part of the feast. In behalf of the committee I should like to say, that it is a great pleasure to them that their efforts have been rewarded with so large an attendance of some of the most noteworthy persons in this special field of commerce, science and art. There are present some of the chief representatives of photo-commercial houses that have been known for more than a quarter of a century for their enterprise, liberality and business integrity. Besides these, we have with us the leading spirits of the Polytechnic, Electrical and Agricultural Sections of the American Institute, all of which sections we expect to hear from, through their chosen speakers. We have with us, too, some who practiced the art of making sun-pictures nearly half a century ago—who nursed the Daguerrean art in its infancy, and who have been eye-witnesses to its birth, death and resurrection. And in that resurrection they have lived to behold the thousand-and-one uses it now serves in the advancement of Commerce, Science and Art. But we have not only with us some of the oldest veterans in the art, but those skilled in its chemistry and mechanical appliances, those, too, who are rated among the most expert practitioners of the present hour, and amateurs who have won a name both at home and abroad, not only for their superior work, but for their valuable contributions to the literature of the art. And last, though not least, we have with us the refining influence of woman, whose esthetic nature lends politeness and grace to man and inspires him in all that is good and true in life.

Surely it is a pleasure to sit down with such a company at a common table and enjoy the privilege of a social interchange of thought. That this occasion may prove to be a pleasure to all and be long favorably remembered, is the most earnest prayer of your committee.

Mr. Gardner then called on Mr. Stetson to speak for the American Institute, who said that it gave him great pleasure to be present at this gathering, and regretted that meetings of this character could not occur more frequently in the life of the Institute. He recalled a number of the early social gatherings of the members of the Institute, and the great benefits he and others had derived from such intercourse where over a very informal repast they had frequently broached ideas that had ultimately developed into matters more important.

The next speaker was Mr. Pendleton, of the Electrical Section, who gave his audience a rapid review of his memories of the early days of photography, and exhibited some early daguerreotypes of himself where, he believed he was correct in stating, bromine was first used to shorten the time of exposure. He said that these pictures were made as early as 1841, and were therefore the oldest pictures with the use of bromine in existence. He also gave a long and interesting account of the development of electricity during recent times, and said that this epoch would be known for its remarkable progress in both photography and electricity.

Dr. Van der Weyle gave a number of reminiscences of early photography and the work he had done in both these subjects since his youth.

Dr. Elliott being called upon to make a few remarks in connection with photographic literature, responded by saying that he had only been in town a few days, having come from the backwoods of Long Island, where he had been in seclusion, taking a rest after his hard labors on the International Annual, basking in the sunshine and rolling in the surf, trying to make himself brown, and make believe he had been in the country all summer. He called attention to the fact that next year would be the semi-centennial of the birth of photography, fifty years from the time when Daguerre gave to the world, through the French government, the first principles of photography in the method of making the daguerreotype. In this connection, he said, that the Photographers' Association of America intended to have a Jubilee Meeting in connection with their Convention, to be held in Boston, next year, and urged the members to take some action to join in this celebration.

Before he sat down, he said, he had a pleasant duty to perform, at the request of a number of friends. There was with them, that evening, a gentleman well-known to the members of the Photographic Section, ever active amongst its most active workers, whose mild and persuasive voice could not be resisted when he requested a paper for one of the meetings. It was needless to tell them that the gentleman referred to was Mr. J. B. Gardner, the energetic Vice-President of the Photographic Section. It gave him great pleasure, on the behalf of Mr. Gardner's friends, to present him with a little token of their appreciation of his labors.

At this point, Dr. Elliott handed Mr. Gardner a small box, which, on being opened, disclosed a gold watch chain. Mr. Gardner was surprised, and made the following reply:

Ladies and gentlemen: To the friends who have been so kind as to thus demonstrate their appreciation of my humble labors, I return the sincerest thanks.

The spirit of kindness thus manifested I value more than the price of the gift, whatever that may be. 'Tis not so much the gift we prize, as 'tis the giver. Rich gifts prove poor when givers prove unkind.

This chain that I have worn for the last thirty years, I shall now lay aside, though it is dear to me from old associations, and wear in place of it this token of your good will. Hoping it may ever remind me of your encouragement and favor, I accept it with many, many thanks.

Mr. John Carbutt followed next with a number of interesting reminiscences of his early efforts to practice photography as an amateur. His first camera, made of a segar box, his lens from an opera glass, and other pleasant memories, growing up to his entrance into the manufacture of dry plates ten years ago; his work in that direction, and lastly, the wonderful results of flash light and instantaneous photography.

At the close of his remarks Mr. Carbutt exhibited an instantaneous picture of some boys diving off a small steamboat, where the time had been so short that the picture showed their shadows on the water before they had touched it, and also every detail of the muscles of their bodies. Mr. Carbutt also referred to the great advances made in photo-mechanical printing.

Mr. T. C. Roche was called upon, and said: In regard to the remarks made by Mr. Carbutt, I wish to call your attention to the improvements or advances made by photography in making relief plates for type printing, used as illustrations for books, magazines and newspapers, from artist drawings, wash drawings, copies of oil paintings and from photographs direct from nature. Great credit is due Mr. Moss and Mr. Kurtz, of New York, and Mr. Ives, of Philadelphia, in this line of work; but we must not ignore or deny the honor due to the originator or the first inventor of this mode of working—Mr. Frederick Von Egloffstein. He patented this process here in 1864, and in England in 1865. His mode of working was from an Interference Plate, or, as called by him, a Photographic Spectrum, which consisted of a plate glass having an opaque etching ground put on one surface and then ruled by a fine diamond point in lines, from two to three hundred to the inch. Some glasses were ruled in single lines others had the lines crossed—this was done by a proper ruling machine. This plate was interposed between the negative or positive, or put in contact face to face, and then copied, the result being a picture in line or dot as required. Where the lines were ruled by the diamond of course it was transparent, and allowed the light and picture to come through on to the sensitive plate. The negative or positive made in this way was put in contact with a sensitive metal plate and after exposure was etched in alto or intaglio as desired in the ordinary way. Those patents having elapsed, are now free to all. The United States Government at one time took great interest in this process, and seriously tried it for bank note printing and spent several thousand dollars on it. Still we say there is nothing new under the sun.

E. C. Townsend spoke on "The Advantages of Social Gatherings," and said: It is an axiom that "Self-preservation is the first law of nature," the logical conclusion of which is, that all animate beings—man included—are selfish, and necessarily so.

But nature, through another law, endowed her children with an innate desire for protective association, the highest types of intelligence always manifesting the greatest tendency and adaptation to such association, and generally realizing therefrom the best results for themselves and associates.

There are instances, however, where certain tribes of the human race reject association, or even communication, maintaining such savage enmity to all others that the only desire towards them is to capture and roll them as sweet morsels under the tongue.

Protective association itself is, of necessity, born of selfishness; but a selfishness bearing in it the germ of refinement, a longing for something unseen, a reaching out and upward for something better than self.

This desire, even in the untutored, prompts to companionship, which, properly cherished, secures protection, profit and pleasure; inspiring affection, self-abnegation, generosity, and so on, until, step by step, as we pass from the social gatherings of the unschooled peasant to the social conclave of the highest grade of intellectual development, we may gather by the way, if we will, the priceless pearls known as culture, honor, magnanimity, fraternity, fellowship, communion, liberality, truth, charity; and "Now abideth faith, hope and love, even these three, and the chief of these is love."

And yet, each and all of these are but the refinements of selfishness, which remains. And being thus possessed, are we not competent for all the affairs of life, and with the immortal Shakespeare to say: "If by direct or by collateral hand they find us touched, we will our kingdom give to you for satisfaction."

But why dilate upon the subject? The advantages of social gatherings are obvious and innumerable; they not only make possible that which we denominate as society, but they rectify and mould the morals and manners of its members—inducing homogenity, peace and good-will.

For him who is at one with his fellows the sun shines brighest, the flowers are more fragrant, the family relation is sweeter, the face of nature smiles, and his cup of happiness is always full to the brim; his servants, be they man or beast, await with pleasure his coming, and his pets of every grade manifest their appreciation of his presence; even the imprisoned canary-bird seems to command the richer melody where culture, harmony and social gatherings prevail.

Yet the value of the individual to society is always in the ratio of his ability to contribute to its needs; and in the fulness of his merits he should be able with the apostle Paul to say: "Let us consider one another to provoke unto love and to good works, not forgetting the assembling of ourselves together."

And remembering always that our duties as members of society are to extend the scope of its beneficence, and by example perpetuate the virtues which made it, leaving upon the tablets of time the impress of our benefaction.

Colonel Wilcox being called upon to recite something, he said that he would give them something that he had never recited before in public, entitled "The Sleeping Sentinel." He had heard it more than a quarter of a century ago in the Senate Chamber of the United States recited by Mr. Murdock, of Philadelphia. The proceeds of the reading were to be applied to the relief of the wounded soldiers in the hospitals around Washington. The incident was, a soldier boy had joined a Vermont regiment, and was on duty in front of Washington on the Potomac, when he fell asleep at his post. He was court martialed and sentenced to be shot. His mother went to President Lincoln and appealed to him for her boy's pardon, and the President in the morning rode out on the battle-field and arrived just in time to pardon him. He had already been blindfolded, he was sitting on his coffin, twelve comrades were drawn up in line and guns had been handed them, and they were waiting for the order to fire.

He was pardoned, joined his regiment, and in the next battle was wounded, taken to the rear, and died praying for the President.

Colonel Wilcox also stated that President Lincoln was present at the reading of the poem at the time referred to.

The author of the poem was Francis De Haas.

The recital was listened to with great attention and called forth much applause.

Mr. Becker gave some memories of his work in photography, and some of the pictures he made in those early times. He spoke of making practically instantaneous pictures with the daguerreotype, pictures taking only a fraction of a second of exposure and due to the use of the greasy buffer to polish the plates.

Sergeant C. E. Von Sothen made some very humorous remarks, comparing his position to the dry plate that needed coaxing, and sometimes intensifying, in order to get any results out of it. His remarks were very amusing, and called forth numerous smiles from the audience.

At a late hour the meeting adjourned, after passing a very delightful reunion.

[*From the British Journal of Photography.*]

PROFESSOR DEWAR ON LIGHT AND ITS ACTION.

During the last Royal Institution Session, Professor Dewar delivered a considerable number of experimental lectures, in the course of which he occasionally had much to say upon light and its chemical action, which portions of his discourses are here selected and summarized.

In speaking of light as an analytical agent, he said that it is particularly prone to set up changes in organic bodies. Wollaston in early times discovered the action of light upon gum guiacum, and it has since been found that guiacum acid derived from the gum is more sensitive; some of this acid dissolved in collodion he applied to the surface of paper, and showed that by half a minutes's exposure to the light from a powerful arc lamp the film became of a beautiful blue color, as deep as the hue produced by ordinary iron blue printing processes. The chemical change set up in this complex acid by light is not yet understood, but Professor Wörter has recently discovered an organic substance, tetramethyldiamine, which is sensitive to light, and the chemical constitution of which is known. This new body is also very sensitive to the action of ozone, which turns it purple; even sulphate of copper will in a limited time turn it a rich purple color by oxidation; ether poured upon it in the presence of light turns it purple. Tetramethyldiamine is one of the coal tar colors easily acted upon by light, and is probably the first of a large series of bodies which all contain methyl and all are likely to be sensitive to light; the presence of methyl seems in some way to be necessary to the action. In dilute solution tetramethyldiamine is quite colorless when spread upon paper; light acts less rapidly upon the paper so prepared than it does upon paper prepared with guiaconic acid. The sample of tetramethyldiamine used by Professor Dewar had been obtained by him from Dr. Schuchardt, of Gorlitz, Germany.

In relation to recent speculations about the possible decomposition of the chemical elements, Professor Dewar said that Professor Stas, of Brussels, has by urging refinements in preparation, obtained elements of more purity than has any one else; he has, for instance, prepared salts of potassium so pure that they will give no sodium line in the spectrum when placed in an ordinary flame. In every way he tried to decompose or transmute the pure elements, but all the attempts ended in absolute failure.

(*To be continued.*)

ANTHONY'S
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EDITED BY
Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.,
and a corps of practical assistants.

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ROCHESTER ACADEMY OF SCIENCE—PHOTOGRAPHIC SECTION.

HEALTH permitted *President* CROUGHTON to once more take the chair at the regular meeting of the section, August 28th. *Secretary* PUNNETT tendered his resignation as an officer on account of his leaving the city soon to take a four years' course in chemistry at the Case School of Applied Science, Cleveland, O.

Besides making a few recommendations for the future he read the following list of subjects treated by members of the section and illustrating what good work the section had been doing. As an aid to some amateur society which may be at a loss for a subject I give it in full:

November 29, 1887.—Magnesium Flash Light, by H. W. Mathews.

December 20, 1887.—New Mode of Positive Printing, by President Croughton.

January 3, 1888.—Lantern Exhibition by the section to their friends.

January 17, 1888.—*Positive Printing (Albumen), by C. F. Hovey.

January 31, 1888.—Hydroquinone Developer, by H. W. Mathews.

February 14, 1888.—Platinotype Process, by Secretary Punnett.

February 28, 1888.—Uranium Nitrate Toning of Bromide Prints, by President Croughton.

March 13, 1888.—Bleaching and Re-developing of Bromide Prints, by President Croughton.

March 27, 1888.—Toning Albumen Paper, by C. F. Hovey.

April 10, 1888.—Lantern Exhibition by the members to their friends.

April 24, 1888.—Vest Camera, by C. J. Player.

May 8, 1888.—*Orthochromatic Photography, by E. W. Horne.

May 22, 1888.—Carbon Printing, by President Croughton.

June 5, 1888.—Lantern Slide Making, by the members.

June 19, 1888.—Prize Print Contest. Prize awarded H. W. Mathews.

July 3, 1888.—*Paper read on "Dry" Pyro Development, by James Streeter.

July 17, 1888.—Demonstration on "Dry" Pyro Development, by James Streeter.

July 31, 1888.—New Enamel Paper, by James Inglis.

August 14, 1888.—Kodak Camera, by S. C. Jones.

(All the subjects except those marked * were demonstrated.)

A vote of thanks was extended to the retiring secretary, after which James Streeter, 65 East Main street, was unanimously elected to fill the vacant office.

The subject of the evening, a "Lantern Exhibition," by C. F. Hovey, was thoroughly enjoyed by the large audience present. This exhibition was given to show what constituted a good lantern slide, also to show the difference between wet and dry plate slides. The decisions of the members were clearly in favor of the wet plate slides.

The members congratulated Mr. Guebelle upon his safe return from his western trip.

The making of lantern slides by reduction by the members of the section, under the supervision of Mr. C. F. Hovey, will be the subject for the next meeting.

Yours truly,
MILTON B. PUNNETT,
Retiring Secretary.

MAGISTRATE.—"If I discharge you this time, Uncle Rastus, what will you do?" Uncle Rastus—"Well, yo' Honah, ef yo' discha'ges me, I spect I'll go off."

PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

MINNEAPOLIS MEETING—FOURTH DAY.

(*Continued.*)

The *President*—I presume that is the reason why we have not received the paper which, I see by the programme, he was to prepare.

He then announced: Mr. Rockwood will make his demonstration of the flash-light process at 11.30.

Dr. ELLIOTT—If it is in order I would like to make the announcement of the Anthony prizes.

Award of Anthony prizes: Plain Enlargements, J. M. Jordan, $50; Crayon work Enlargements, G. Heim, $50; Water-color Enlargements, L. Walkup, $25.

O. P. SCOTT,
J. LANDY,
Committee.

The *President*—Members of the Convention, the Executive Committee think that there is due to the Manager and Superintendent of this building, and that we should pass a resolution of thanks as follows:

By the Executive Committee:

Be it Resolved, First.—That the thanks of this Convention are due and hereby heartily given to the management of the Minneapolis Exposition Building for many favors received from them.

Second.—That we desire to thank Mr. C. M. Palmer, the manager of the Exposition, for favors received.

Third.—That for attention to our wants and his time freely given early and late, and for his endeavors to make everything pleasant and convenient to exhibitors and officers, Mr. Fields, the Superintendent, is entitled to, and has, our hearty good-will and thanks.

The *President*—I would like to have Mr. Potter make a few remarks to show why we should pass these resolutions.

Secretary POTTER—I don't know that I can add anything to these resolutions, because they cover the ground, and while I might expatiate upon them, it all amounts to the same thing. Mr. Fields has done everything in his power to accommodate us. He has allowed us to take everything and anything we wanted. And the only restriction he has placed upon us is, that we should ask for what we wanted. I believe that he did make one man take a thing back because he did not ask for it, but he immediately let him take it again. There were a few things which he would not let us have because the owners had put that restriction upon them, but he has done everything in his power to accommodate us, getting men for us and allowing us the use of his telephone service. The resolutions offered do not express any too much; in fact, language could not express it fully.

The resolutions were seconded and unanimously carried.

Mr. LANDY—I move a vote of thanks be tendered to the photographers of Minneapolis and St. Paul and all who have helped to make our visit here so very pleasant, and to Captain Zimmerman for the pleasant excursion we had at Lake Minnetonka yesterday.

Dr. ELLIOTT—I second that motion with a great deal of pleasure. I am sure we are all indebted to the photographers of Minneapolis and St. Paul for the good health we have enjoyed by their securing the holding of the Convention in this invigorating climate. I have never been so well on any occassion as I have been since coming to this city.

Motion unanimously carried.

Dr. ELLIOTT—There are other gentlemen that we must not forget, and they are the members of the Press—the reporters and representatives of the press of Minneapolis and St. Paul. They have treated us with a great deal of courtesy. They have given us a great deal of space in their columns.

I move a vote of thanks to the Press of Minneapolis and St. Paul.

The *President*—I wish to say that they are entitled to all the thanks we can give them; for we certainly never before have been treated so well as we have been by the press of Minneapolis and St. Paul.

Motion of Dr. Elliott unanimously carried.

Mr. GENTILE—We have among us to-day the veteran photographer of the Northwest. He is a friend of Mr. Landy's, and I think he ought to be invited to the platform and introduced to the Convention. I allude to Mr. S. M. Fasset. He was a photographer in Chicago at the time of the great fire, and in fifteen minutes the whole of his establishment was laid in ashes. He sustained a loss of several thousand dollars.

The *President*—Will Mr. Landy please escort Mr. Fasset to the platform? I now have the pleasure of introducing to you Mr. S. M. Fasset, at present of Minneapolis, formerly of Chicago.

Mr. FASSET—*Ladies and Gentlemen:* This is utterly a surprise to me. I am not prepared to make a speech. But I will say that I have seen here many of the finest works of photography that I have seen anywhere. I have traveled abroad; made photographs in Rome —in the Catacombs—and I have never seen such work as I have down stairs. I think it is marvelous. You ought to go on; and if you go on and make such improvements as you have since I left the business fifteen years ago, I do not know where you will be. Your appliances are so much better than they were then. We could not make instantaneous photographs as you can now. I congratulate you all.

Another thing I want to say is, I always like to see ladies in any institution, as nothing can succeed as well without them. I thank you very much for your attention, and will ask you to excuse me.

The *Secretary*—I will read the award of prizes awarded by the Air Brush Manufacturing Company, as follows: A. R. Cottrell, Minneapolis, Minn., for best finished Water Color, one Air Brush; S. M. Kelley, Racine, Wis., for best finished Black and White, one Air Brush.

The *President*—I have here a resolution offered by Dr. Charles Forbes which he desires adopted by this Convention. It reads as follows:

Resolved, That this association hereby adopts the metric system as its system of weights and measures.

And, so far as practicable, the editors of photographic journals and writers for the same, are most respectfully requested when giving formulas to use this system, followed by the English equivalent.

Resolution seconded.

The *President*—Are there any remarks?

Dr. ELLIOTT—Mr. President, I think I said pretty much all I wanted to say about this matter the other day, though I would like to repeat some of the ideas. The metric system involves this idea—that the weights and measures are absolutely interchangeable. One gram of water measures one cubic centimeter, consequently a thousand grams will measure a thousand cubic centimeters, and so forth. They are perfectly interchangeable, and if you once get in the habit of using them there is no difficulty whatever, and I strongly recommend you to adopt this resolution and work this way. Get a box of the metric weights, the gram weights, and use them. You will find it just as easy as rolling off a log. You can't make any mistake. If a man tells you to use ten grams of soda, and 100 centimeters of water, you know exactly how many to use. No question arises in your mind whether it is a troy ounce, an apothecary's ounce or an avoirdupois ounce. I strongly recommend that you adopt this system.

The resolution of Dr. Forbes was then put and carried.

Dr. ELLIOTT—I would move that we recommend all dry plate makers and all those who publish formulas for developers, etc., to also print in their directions the formulas in the metric system, that it may be readily understood and used. They can give the ounces and pounds, if they choose, but we recommend them to give the formulas in the metric system anyway.

Motioned seconded and carried.

The *President* then introduced Mr. George G. Rockwood, who proceeded to give a demonstration of Flash-light Photography.

The *President*—Before you begin, Mr. Rockwood, I would say there has been considerable said about the triplex picture. We would like to have you give us some information upon that subject.

Mr. ROCKWOOD—Anyone who has anything to do with children's photographs is constantly bothered by mothers wanting various views. Mothers always want all the different views of a child, and that comes to be a very serious thing; because, in the first place it is expensive to finish negatives and customers don't want to pay for them.

It occurred to me to make three views on a plate, or, perhaps, to give two plates getting a variety of poses. Now, of course, with the process of instantaneous photography requiring no head rest, it is a perfectly simple matter to get certainly from three to five, or perhaps six, views. I very often get six pictures on two ordinary plates. I use a 5 x 7 camera—one made for ferrotypes. I had some little mats made (mats shown) and then made the exposures, and by their use I can very easily take three views on a plate joined together. You can then select the best and cut them off. I think it is best not to give them all they want. Tell your people they can have their choice of any three out of the six. Very often they will select all on one plate, so that you won't have to cut your plate. That makes a very satisfactory thing, and has enabled me to charge a little extra price. Charging for the plain imperials $5 or $8 for these, or $10 for a dozen of each.

Let me say a word about the methods of introducing a thing of this kind. The way I introduced this, and made a very remarkable success of it, was simply when people came in for imperial cards, I would fill the order and at the same time make one of these, and send them both with a little printed notice, if they wanted these it would only cost them $5 extra. I don't know as I had a single instance where they rejected these pictures. They almost always sent the extra $5. I think that is the best way to do it. Somebody asked me what I charged for my patent. I did not get any patent. I simply announced in the journals that I would send the printed instructions. It is not necessary for anybody to buy, photographers especially, and if they will send to my establishment in New York they can get printed instructions how to do this. The camera I use has a diaphragm in front of the plate. You should be careful to have the notches on your camera at such a distance that they will come right; then you push your plate along and make first one view, and then another, and another. You have all worked these combination cameras. There is hardly a possibility of your failure to get good views with the very quickest shutter that you can use. I first used the drop shutter on them.

You don't have to arrange the light on a child with the care you do on an adult. Put them up next the window and you will find the light all right.

Now in regard to flash-light photography it is very hard to tell how much we are indebted to Dr. Piffard, who invented or discovered this magnesium light. Dr. Piffard was an amateur in New York, and, as a dermatologist, desired to photograph patients to show the various stages of disease. He tried various lights, and finally hit upon that of magnesium sprinkled upon gun-cotton, which, when ignited, passed off in a quick, terrific light, which ordinarily would give plenty of exposure.

There is this one thing, please understand, that everything that is added to magnesium is to its detriment, both as regards its actinic power and its healthfulness. Perhaps I am not wise in saying such things, because I know there are a great many compounds in the market for this purpose.

I have photographed two thousand people in a hall two hundred feet square. It was the Twelfth Regiment of New York. They extended exactly one hundred feet, and behind them was a vast audience making up a total of about two thousand people. I arranged along the side of the building at short distances charges of gun cotton and magnesium and at the proper moment fired it. It was a lucky thing for me that I got out of the door of that hall in about five minutes or they would have "fired me," because there was a cloud of smoke clear across that room so that we could not see twenty feet.

The inventor's name, by whom this lamp was originated, I have forgotten. My interest in it is simply the interest of a photographer.

With this lamp you can work hours or more in a room without showing any smoke. My operator made these pictures (pictures shown) with a wide angle Dallmeyer lens, the interior of a room. He made them in certainly not more than a tenth part of a second, and the pictures, as you see, are highly illuminated.

I might state here that I have often paid as high as twenty dollars in New York to get experts to illuminate a room with calcium light when I wanted to make photographs.

I will now explain the principle of this lamp: The lamp might be made much smaller than this if desired. We ignite the flame in this tube, which connects with this air tube, well charged with magnesium, and after lighting then press this bulb and send the magnesium through the cone of flame. (This demonstration was made). The first thing will be to put the charge of magnesium in. It so happens that this little funnel (holding it up) holds about twelve grains of magnesium. Of course you will not get the contrast or effect of the flash by daylight. (Demonstration of flash then given.)

The inventor has gone still further and put on what he calls the flame erector.

It forces the flame into a cone form, which makes it intensely hot. I have worked with this lamp a whole evening and there was hardly enough smoke in the room to notice. We don't use gun cotton, only an alcohol lamp made in the form of an Argand burner, and the magnesium comes from the inside of the flame. He has two bulbs here in order to get quite a force of air in the lamp.

In New York, where we photographed almost every night, it is a matter of very large income. I am obliged to be personal in my remarks because I speak of what I know, and why I speak of it, is that you may take advantage of it. It is a very easy matter to build up a little evening business, and it amounts to a good deal. The evening before I left New York a gentleman came to me to take one of these pictures. I told him I was not in the habit of going out evenings; but he urged me and said just name your price. I said twenty dollars, and went up and took the picture, was not gone more than fifteen minutes and came away with my twenty dollar bill. In this house I did not have this lamp. I took it with gun cotton and magnesium. The result was that after I had made one exposure I was obliged to go. I took care to have three cameras standing together making a sort of battery, and all three plates happened to be good. There is no way of repeating those negatives. This gentleman wanted pictures taken in different parts of the room and different combinations, but the room was so full of smoke I could not do it. Had I this lamp, I might have worked there all the evening and not been bothered with smoke.

Question—Will you kindly tell us what kind of light you use for your preliminary work; how you manage to have time to focus your cameras?

Mr. Rockwood—I focus on the gas-lights. At Dr. Talmage's Tabernacle (I had also photographed the audience in Plymouth Church) I photographed the audience sitting on one side but by the time I got over to the other side I could not photograph it as the room was full of smoke.

The light is so intense that with dry plates you can use any field instrument and a wide angle lens.

The *President*—How much light do you have to use in taking those large audiences?

Mr. Rockwood--When I photographed the Twelfth Regiment I had the light extended along for fifty feet with an electrical apparatus, and lit the cotton all at once and it went off in one immense flash. The point I want to make is that this lamp does away with the smoke that gun cotton and other combinations of magnesium produce. If you could use the magnesium in its simple form you could get a much better combustion.

Preparations have been made for the manufacture of this lamp, and it will be in the hands of the principal stock dealers within a month or so. I think that Mr. White told me he was going to get out these lamps for about six dollars each. The lamp is all complete.

There is nothing more to be added when you get it, only to use it.

Question—What kind of a wick do you use?

Mr. Rockwood—We use a solid wick, and that wick will last as long as the lamp. It never has to be renewed for the reason that the inventor has a little perforated top that lies on it, preventing the wick from charring. You will hold a small lamp around the sides of the burner until it is somewhat heated and the combustion has started. If you don't care about the bother of putting in new wicks, you can take this little top off and light the lamp with a match. But the inventor thought this would be quite an improvement to the lamp.

Such of you as want to communicate with the inventor can write Norman White, 96 Maiden Lane, New York City.

W. H. H. Clark--Providing you wish to photograph a large audience with this lamp, how would you ignite the different lights at the same time?

Mr. Rockwood—The inventor proposes to have a little larger lamp, in order that you may send off a larger charge, and to use but the one lamp.

There is another point which I did not speak of. The inventor has introduced a little stop into this (demonstrated). This will enable the operator to let the air on by degrees and continue the flame for a second or two. That would be quite sufficient time to photograph a large audience.

If it was night I think I could with 50 grains of magnesium, get a complete photograph of this audience, with one lamp, so fully illuminated that if you had a friend in the audience you could easily pick him out in the picture. This shows very plainly what you can do with a large group.

Question—What is the price of magnesium?

Mr. Rockwood—Magnesium is sold, I think, for about three dollars per pound, not more than four dollars at the outside, which makes this exposure cost about 1½ to 2 cents.

Mr. Landy—In what position do you place your lamp?

Mr. Rockwood—Most amateurs get their light down very low, on a level with the subject, or lower. That is why they get those pallid pictures. I would place the light so that it comes down on the face, at an angle of 45 degrees, which would give a finely illuminated picture.

Question—Is it considered advisable in photographing large audiences to have the light come from one lamp?

Mr. Rockwood—Yes, I think so, if you can possibly get along with the light at one point. For this reason: If you change the high lights of a picture, you get the effect of everything moving, and it has the same effect if you change the lamp. For instance, one of my operators that photographed the interior of a room with a calcium light, thought he was unusually smart, and that he would be very careful to move his calcium light around to the other side of the room, of course, changing all his high lights. His picture looked as if it moved. I said to him, don't you know any better than to move your camera. He said, "I'll take my oath that the camera was not moved." Well, I said, you either moved that or moved your light. He replied, "Why, of course, I moved my lights."

If you are going to have a very large audience, I think I would try the gun cotton.

Mr. H. S. BELLSMITH—Will 20 grains of magnesium with this lamp and alcohol give you as good an actinic light as the same number of grains with gun cotton?

Mr. ROCKWOOD—Twenty grains with this lamp gives you more light than a quarter of an ounce with gun cotton. That is the result obtained by an actual experiment. This lamp made a number of things practicable that has never before been attempted. In New York some of those very elegant office buildings have dark places in them, and the architects want to show matters in detail. They want to show peculiar stairs and things of that kind. With this lamp we are able to get right there and make a photograph of it. It is now well known that we can do anything—photograph under ground or anywhere else.

Mr. SCOTT—May I ask if that light is used without the use of any screen between the sitter and the light?

Mr. ROCKWOOD—Yes, sir; ordinarily.

Mr. DOERR—I move that a vote of thanks be given Mr. Rockwood for his very able instruction.

Motion carried unanimously, with applause.

The *President*—We would like to close the business of the meeting as speedily as possible, otherwise we shall have to have an afternoon session.

Mr. W. H. H. CLARK—I move that the remaining papers on the programme be read by title.

Motion seconded.

The *Secretary*—I think that is hardly fair. If men take the time to write these papers, I think they should be read, and that we should listen to them.

The *President*—I have been requested to call upon Mr. Overpeck, of Hamilton, O.

Mr. OVERPECK—I think there are a few points that Mr. Rockwood has overlooked. Those compounds are of practical value. I claim, and I have experimented, that exposure can be very much shortened and very beautiful high lights produced upon the surface.

I have been able to make an exposure with a No. 7 Euryscope almost instantaneously by this light, and got very good effects. When we want to shorten our exposure during the day, and there are many cases where the photographer finds it necessary, where there is danger of movements among the sitters, if the exposure can be shortened it is, I think, a very great object.

As regards the smoke from compounds, I favor the compounds—all that I have tried. I have made eight exposures without waiting for the smoke to get out of the way. There is a great deal of difference with regard to smoke. I claim there is a great deal better exposure with the compound, as parts of the magnesium fly away and do not burn at all.

In using it in a gallery, I think it is far better to have a tripod or stand upon which to place your light; and have a screen.

The *President*—From what direction do you have your high light come? From the direction of the daylight?

Mr. OVERPECK—Yes, sir; certainly.

Mr. ROCKWOOD—I think that this lamp is an admirable thing to use as supplementary to daylight. In this lamp there is just exactly what you desire—a complete combustion of the magnesium. That is why it is free from smoke.

It has been claimed and demonstrated by the Professor, that there is nothing in the compounds that have yet been made that is so strongly actinic as the simple magnesium. I give him as authority, although I know it from my own experiments. Of course this is not so easy to carry as some of the compounds which you can put in your pocket.

I think Mr. Overpeck's suggestion about putting the light upon a tripod a most excellent one.

Mr. OVERPECK—I have made an experiment with a similar lamp myself and I could not get a rapid enough light, *i. e.*, it was too slow and continued too long, so that the sitter was liable to change expression. That is one reason why I favor the compounds.

Mr. ROCKWOOD—Will you please describe your lamp?

Mr. OVERPECK—The lamp was very similar to the one you have exhibited. I had the powder come up through the flames.

Mr. ROCKWOOD—How long was the exposure?

Mr. OVERPECK—The lamp was intended to be used in connection with daylight.

Mr. ROCKWOOD—My exposure was somewhere between the tenth and twentieth part of a second.

Mr. OVERPECK—That is more rapid.

Mr. ROCKWOOD—I think, sir, that is absolutely instantaneous, *i. e.*, as near as we can realize that anything is instantaneous.

I shall be very glad if there is another lamp. We should like to see it, and know about it.

The *President*—The first paper will be, "Dark Room Practice," by J. Hegyessy, who is a practical photographer, and I have no doubt but that you will receive much information from him, but it is quite a long paper.

I will say that we expect to have the report of the committee on awards when we get through with these papers.

Mr. W. H. H. CLARK—I think, if you wish the people to stay here, all the papers should be read by title.

The *President*—Will you make a motion that this one paper be read by title?

Mr. CLARK—I move that this paper, "Dark Room Practice," by J. Hegyessy, be read by title. (See page 492.)

Motion carried. Paper was so read by the Secretary.

Dr. ELLIOTT—The German exhibit came over in a steamer that got aground in New York Harbor, and the pictures have only just arrived. They will be put up this afternoon.

The *President*—The next paper on the programme is "Transferrotypes," by H. S. Bellsmith.

Announcement greeted with applause.

Mr. BELLSMITH then read his paper. (See page 496).

The *President*—Mr. Bellsmith will undoubtedly answer any questions you may desire to ask.

Mr. BELLSMITH—I want to say that we gave a demonstration at our booth and a great deal of interest was manifested. We had some forty or fifty people there all the morning, and I was very much gratified at the interest shown.

I was unfortunate enough in lighting a gasoline stove to have a little explosion, which burned my face, and as I am suffering quite severely will ask you to excuse me.

The *President*—We expected to have a paper from Mr. Joshua Smith on a very practical subject, "Photography as a Business and the Business of Photography."

Mr. Smith has been very busy and we have not received the paper.

There was also a paper by Mr. Gentile. As he is not present, it will be well, perhaps, to read it by title.

Motion to that effect seconded and carried.

The *Secretary* — "In Union there is Strength," by C. Gentile. (See page 495.)

The *President*—The next matter of business is the report of the Committee on Awards, which will be read by Mr. Rockwood.

(*To be continued.*)

Bibliography.

THE PHOTOGRAPHIC INSTRUCTOR. Edited by W. I. Lincoln Adams. New York. Scovill Company.

This is the series of lessons that have been in use at the Chautauqua School of Photography, revised and enlarged for general work. It consists of a description of the apparatus used, the various photographic manipulations, such as developing, fixing, toning, mounting, etc. The subjects are well discussed, and the book is well printed and illustrated. But there are a score of just as good works as this already in print, and we do not believe in the multiplication of such books; it is very confusing to beginners.

THE AMATEUR GUIDE IN PHOTOGRAPHY. By T. H. Blair. Boston, Philadelphia, Chicago. The Blair Camera Company.

This is a neat little pamphlet for beginners, issued by the Blair Camera Company. It gives advice about selection of apparatus, and directions for the various ordinary photographic manipulations. It is well printed and worthy of the gentleman who compiled it.

THE PHOTOGRAPHER'S BOOK OF PRACTICAL FORMULÆ. Compiled by W. D. Holmes, Ph.B., and E. P. Griswold.

This is a very useful selection of all the various photographic formulæ that have appeared during late years. They are well arranged, and the volume is well printed. It is one of those volumes that one likes to keep handy for reference. There are 224 pages of reading matter, and a number of useful tables.

LAKE GEORGE AND SARATOGA.—THE ADIRONDACKS. By S. R. Stoddard. Glens Falls, N. Y.

These are the latest revised editions of Mr. Stoddard's well-known and thoroughly reliable guide books. The large number of editions through which they have passed is better testimony than any words of ours in regard to their value. They are kept thoroughly revised, and valuable maps make them still more useful. In the Lake George volume there is a new map of the lake and surrounding country, which adds still more to its great usefulness.

SUN AND SHADE. A photographic record of events published by the Photogravure Company, New York.

This is a picture periodical that relies chiefly on photography for its illustrations. It is a large quarto page magazine, and the pictures are remarkably good. In the number before us we have a photogravure from a painting by Le Rolle; another of President Cleveland; yet another of General Harrison; a number of views of yachting pictures by Charles Wager Hull; a large double page of pictures in the life of Frederick III of Germany; a group of the scenes from "The Midsummer Night's Dream:" four views of the work on the New Croton Aqueduct, and a number of others. The idea is a novel one and very well carried out, the photogravure and other photo-mechanical work being exceedingly good.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

Q.—W. W. B. writes: I send by express a negative for your opinion as to what causes the corroded appearance on the film; all our professional photographers here give it up. Can you, through the BULLETIN, tell us what the cause is. It is a Cramer plate 35, developer, 60 grains sulphite of soda, 30 grains carbonate of soda, 15 grains hydroquinone (taken from the BULLETIN). The developer, fixing-bath and water were all chilled in refrigerator, developing room rather warm. All plates out of that box are the same.

A.—In the first place, the picture is very much out of focus, and this adds to the blurred appearance. The cause of the trouble is probably due to prolonged development in a very cold solution, or a rapid change from cold to warm solutions, or the reverse. We could not say very definitely what the exact cause is unless you give us more explicit description of the method of development.

Q.—S. J. B. writes: I enclose you three prints that are spoiled somehow—how I cannot think, for until recently I have had no such trouble. I am an amateur and constant reader of the BULLETIN. I will be glad if you will tell me through the BULLETIN what is the trouble and how I can prevent its repetition. The paper is S. & M. Dresden. I used a neutral 35-grain bath for silvering. Floated about two minutes. Fumed perhaps too long (about twenty-five minutes); printed as usual; toned with usual gold and carb. soda bath; fixed in hypo, made alkaline with carbonate soda, washed in several changes of water for about four hours to be sure about eliminating hypo, and thought my prints were good when I put between blotters to dry, but when I came to mount (after leaving them stand in blotters over night), I found about one-fifth of them turned like these enclosed. I think it is what you term "measles," but being somewhat inexperienced, concluded it would be best to send direct to you.

A.—The trouble with your prints is imperfect fixing. Either they were not in fixing bath long enough or the bath was exhausted. The stains are from silver hyposulphite left in the paper, which turns yellow on exposure to light.

Q.—H. P. writes: Please let me know how to re-crystallize nitrate of silver, and how to take silver out of waste paper and crystallize it.

A.—To re crystallize nitrate of silver it must be dissolved in the least quantity of water (distilled) that will take it up, and then evaporate until a crust begins to form on the surface of the solution; now remove the heat and allow to cool. Pour off the liquid and allow the crystals to drain; when dry they are fit for use. This is only successful in rather large quantities. There are several methods for using up silver waste, see BULLETIN, 1887, pages 174 and 207.

Q.—W. H. Z. writes: Will you please tell tme the reason that my albumen paper blisters in the silver bath and why it peels off? Someimes it has little spots all over the paper.

A.—It is probable that your silver bath is too warm. The small spots are due to "tears," and can be overcome by rubbing the paper with a small tuft of cotton before silvering it.

Q.—C. H. B. encloses two stained prints and writes: Will you kindly inform me through the columns of the BULLETIN what caused the stains on the inclosed prints?

A.—The stains are from hypo, either imperfect fixing in a dirty hypo bath or too short a time in the bath. Perhaps hypo came into contact with the paper before printing; in any case the stains are from that chemical.

Q.—F. L. M. writes: Will you be kind

enough to give me through the BULLETIN a formula for toning with platinum?

A.—See BULLETIN, 1887, page 161, or take ordinary acetate bath and use twice as much platinum chloride as you would of gold chloride.

Q.—D. B. writes: Will you kindly inform me through the columns of the BULLETIN of a formula for making black tones on a print and how to use the same. I would prefer a formula of one solution if you can give it to me.

A.—Will answer in our next issue.

Q.—R. & Son write: Enclosed find a photograph in which the shadows and background are not very clear and look a little mealy. Will you please tell me through the BULLETIN the cause of my trouble? I silver my paper from one to two minutes on a bath forty-five grains strong and fume thirty minutes, toning with home-made gold that works nicely.

A.—We think your principal trouble is too feeble printing. Print much deeper and your tones will be much richer.

Views Caught with the Drop Shutter.

WE regret to hear of a fire in POMEROY'S STUDIO, 618 Main street, Kansas City. The loss was quite heavy; but fortunately it was covered by insurance. We hope that by this time all is in good order again, and tender our sympathy to Mr. Pomeroy in his misfortune.

ALLEN BROS., the well-known Detroit photographic merchants, send us their new catalogue. It is a handsome, large, octavo volume of 170 pages, well illustrated and filled with all the best photographic apparatus and materials, from the dry plate to the card mount and frame.

WE are informed that R. Broude & Co., Pittsburgh, Pa., have recently leased quite a large addition to their present extensive quarters, and say they are now ready to supply anything that anybody may want in their line at short notice. The new floor they propose to use as an immense show room for photo apparatus, accessories and all kinds of appliances for photographers. They are evidently pushing the trade and propose, like Eli, "to get there."

WE notice the removal of H. Lieber & Co., Indianapolis, to their new store, 33 South Meridan street. They evidently have room enough to do all the moulding, picture frame and photo stock business in the West, and no doubt they will get their share. The Meridan street Building, 21 x 120 feet deep, four stories, with an L on Pearl street, 80 feet front by 65 feet deep, four stories. The entire first floor of the Pearl street building is devoted to photo goods, including everything demanded by the professional and amateur photographer, a full line of all the leading cameras, lenses, etc., including the Dallmeyer Lenses, Climax N. P. A. Novelette Cameras, etc. This department is under the supervision of Mr. Henderson George, so long and favorably known throughout the West.

As we go to press we receive a visit from our good friend H. McMichael, the President-elect of the Photographers' Association of America. He is in New York attending a large Masonic gathering.

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EVENING POST JOB PRINT, N. Y.

A NEW HAMPSHIRE FARM-HOUSE.

ANTHONY'S
Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

SEPTEMBER 22, 1888. Vol. XIX.—No. 18.

THE NEWSPAPERS AND THE AMATEUR.

It is curious to note the different opinions entertained by newspapers in the matter of amateur photography. In some of them we have long leading articles about the advance of the movement, extended descriptions of the apparatus used, eulogies of the benefits of the practice of photography by amateurs, and many other things, good and true. One writer dilates upon the social tendencies of the Camera Club just organized in his city, another speaks of the development of the movement as an art educator, while yet another (probably a naturalist) goes into extacies over the love of nature that it cultivates. All these writers appreciate the good qualities of the practice of photography by amateurs. But there is another class of writers who constantly take pains to deride it, and call our amateur photographers all the hard names they can find in a modern dictionary. To them the members of our amateur photographic clubs are fiends, monsters in human form, demons, and a host of other vile creatures, epithets that are the children of an idle brain, or the results of some dyspeptic disorder. We have recently received a Western newspaper containing just such a tirade against an amateur photographer who tried to photograph a scene in a theatre. Now, it must be understood that taking pictures under such circumstances should never be practiced without the consent of the authorities. Nevertheless, because some foolish knight of the camera took liberties not warranted, it is no reason why the whole army of his fellow-workers should be belabored with hard names.

In the first place, taking a picture under the circumstances mentioned is almost an impossibility, except with the most elaborate arrangements for lighting the scene and a far longer exposure than would be possible in the case mentioned. Instantaneous work in a theatre is only possible with the electric light or magnesium flash, and anything short of instantaneous exposure would give an utterly useless negative, unless the actors are quiet during the time the exposure is made. And even then the most brilliantly lighted scenes are very difficult to get good negatives from. So the text upon which the Western editor founded his anathemas is a bad one and entirely without force, it being almost impossible to obtain a picture under the circumstances he mentions. Notwithstanding all this, we must condemn the practice of amateur photography in such places,

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where the authorities or parties interested object to it, or where their consent has not been previously obtained.

Of all the amateur photographers that we know, and their number is large, we cannot recall one who would not be gentleman enough to respect the feelings of others in the practice of his art. To call these men fiends and monsters in human form is as wild an assertion as can well be thought of. The vast majority of them are gentlemen of leisure, with fine artistic feelings and a love of investigation, that is adding an untold wealth of improvement to photography. Some of them use our art in the prosecution of their studies in medicine and science; others use it in teaching and other educational pursuits; and all use it to advance the science of photograpy, for they give their results to the world without money and without price. There is not an amateur photographer that we know but will tell all his successes, all his little methods of procedure, all the results of his experiments, with a pleasure that comes from a true spirit of scientific investigation.

Our best professional photographers do not sneer at the amateur and call him bad names. But from a large acquaintance with these men we know that they admire his work, feel that he is working in a domain that their time and inclination will not allow them to enter, and that they are ultimately benefitted by his investigations and the increased love of good photography that is developed among people at large. We must, therefore, condemn these wild and senseless tirades against amateur photographers in general, because one of their number now and then makes a foolish mistake. Condemn the individual by all means, but remember there are hosts of gentlemen and men of honor and integrity laboring to advance our art, and that purely for the love of it. Encourage, therefore, rather than discourage the amateur photographer.

EDITORIAL NOTES.

According to a recent act of Congress, the President of the United States has been authorized to invite the several governments of Mexico, Central and South America, Brazil, and the neighboring countries, to join the United States in a conference to be held in Washington some time in 1889, to consider the formation of an American Customs Union and the adoption of an uniform system of weights and measures. As each government is to have a single vote, and the metric system is already used in the custom houses of the various countries to be represented, there is little doubt but that this will become the government system for the entire Continent of America except Canada. Let us hope that this is the beginning of a new system of weights and measures for the people of the United States; that is a decimal system like their coinage.

We have to thank Mr. E. Richards, the President of the Washington Camera Club, for a copy of their Constitution and By-Laws. This club was organized in 1883 as "The Argents," and is now an incorporated society under the above title.

The German Technical Glass Works at Jena have been making some special experiments upon a new glass for photographic purposes; Steinheil and Voigtlander are both grinding lenses from this new material, but the results are not yet published.

AT the annual meeting of the Portland Camera Club the following officers were elected for the ensuing year: *President*, W. W. BRETHERTON; *Vice-President*, FRANK WOOLSEY; *Secretary and Treasurer*, EDWARD NORTON.

DR. KEYSER, of Hanover, Germany, has taken a photograph of a rainbow from the Rigikulm, using an azaline plate. This is a very rare piece of photographic work, only one or two others having succeeded in fixing upon the sensitive plate a good image of the "bow of promise."

THERE is a possibility in the near future of using aluminium for lense mounts. As is well-known, the greater part of the weight of a photographic objective is in the metal tube that holds it. This tube is now made of brass, which has a specific gravity of about 8, while the metal aluminum is only about 2.5, thus making it only one-third as heavy. The possibility of getting cheap aluminum comes from the fact that sodium, which is essential to its production, can now be made very much cheaper by a new method invented by Mr. Castner, formerly of the School of Mines, New York, but now in Birmingham, England, where large works are being erected to supply both cheap sodium and also aluminum. The sodium made by this new process is said to cost only nine pence, or about eighteen cents per pound. Its former price was six shillings, or about one dollar and a half per pound.

PHOTOGRAPHY has recently been applied to the examination of steel. When submitted to microscope examination steel exhibits a crystalline structure, which gives character to the metal and determines its quality. It has been found that by raising it to a white heat the examination would be more complete, but then the microscope could not be used. It has therefore been necessary to make a photograph of the heated metal and examine the negative with a microscope.

◆

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

The Selection of Objectives.—Determination of Focal Length and its Utility.—Hydroquinone Developer.

THERE is such a variety of photographic objectives in the market at the present time, that professionals as well as amateurs find it oftentimes very difficult to select the most suitable for certain purposes. This applies chiefly to amateurs. Too readily they have a fondness for large sizes, and would like to work large plates, or at least use large lenses. How many times have I seen lenses on 5 x 7 cameras, which were intended for 8 x 10 plates.

The portrait lens, which in former times was a necessity, has now lost a good deal of its importance. Since the advent of highly sensitive plates, instantaneous pictures can be made with aplanats, yes, with a good summer light such is possible with the third or fourth diaphragm. The aplanat, or the rapid rectilinear lens, which is of the same construction, having the advantage of absolutely correct delineation and larger visual field, has in its different varieties gained a well deserved favor. It has the advantage of meeting, so to speak, all moderate requirements, that is, sufficient light power, sufficient visual field, correct delineation, moderate size and price.

The new anti-planat construction, which, besides the aplanat, is now frequently used, has somewhat more light-power than the latter, the proportion being about 1 : 1½. The latest numbers of the Voigtlander Euryscopes have still more light-power.

To make now a proper selection among the objectives for a certain size of plate one should look for focal length.

As a good average objective of aplanatic construction, one should be selected whose focal length corresponds with the size of plate.

This will be sufficient for most cases. For the favorite size of 5 x 7 there is in Steinheil's Catalogue an aplanàt, Series III of 18.9 c.m. focal length, only slightly larger than the plate size. The picture size of the same, smallest diaphragm, is given as 20.3 c.m., and is therefore beyond the required size of 18 c.m. I have used this objective during my travels for 5 x 7 plates with the best results, and made most of my views with the same. The visual field of 5 x 7 plates is 51 degrees and of 5 x 8 plates even 60° 20′, which is sufficient for most views.

If buildings at short distances are to be taken, then the above field is not sufficient, and recourse must be had to a wide-angle instrument. This must have a focal length half as large as the size of plate to meet all practical requirements. A perusal of the several lists of wide-angle lenses will lead to the result that for the 5 x 7 sizes there is no wide-angle instrument of the said focal length (3½-inch) in existence which covers a 5 x 7 plate. Nearest to it is the Steinheil; Series V, wide-angle, No. 1, although it does not entirely cover the plate. Voigtlander also has no wide-angle objective with sufficient field and focal length of 3½-inch for the said size of plate, and this is likewise wanting in the list of the new wide-angle aplanats of Hartnack, the most luminous of all. I cannot help drawing the attention of opticians to this deficiency.

Recently there have been introduced into the market so-called objective sets, from which twenty or more different combinations can be made. One of this kind exists here, from Français, in Paris, but it admits only of a combination for a 5 x 7 plate.

Such a set may be serviceable to photographers, who make several sizes of pictures, but for amateurs, who generally work only one certain size, it offers no advantage, particularly when traveling. Here one would be forced to increase the luggage by the pretty extensive size of the objective case, whose weight is 1,200 grams, while the joint weight of the two above recommended objectives, with diaphragms, is only 530 grams, and the instruments can easily be transported in a pocket.

In regard to focal distance it may be mentioned here that the price lists do not always agree in their figures, and I have discovered deviations of 25 per cent. It is, therefore, justifiable for one to make his own calculations.

But the determination of the focal length in a lens combination is not such an easy matter, if exactness is required. If any approximate value is satisfactory, the process will suffice by which the focus is taken on a distant object, and then the distance of the diaphragm opening (not the back lens) from the ground-glass is measured. This is equal to the focal length.

The measuring of the distance (diaphragm to ground glass) has also its inconveniences. The most simple way is to unscrew the lenses from the mounting, so that a rule can be put directly through the diaphragm opening to the ground glass.

The following method is more exact, but it necessitates a camera whose rear part can be drawn out to double the focal length:

The focus is taken on a measured surface, until picture and measure are of an even size.

I draw upon a drawing board a line measuring 5 c. m., put the camera in a direct vertical position with the board and draw the bellows. To determine the size of the picture, I draw again a line upon the ground-glass of also a length of 5 c. c. m., and focus until picture and object are of even size. I then make a mark on the bed of the camera. Afterwards I take the same camera, direct it upon a distant object, focus again sharply, and mark on the bed. The distance of both marks so obtained forms the focal length.

From the focal length can easily be determined the light-power of an objective by dividing it by the diameter of the lens. Aplanat No. 3 has a diameter of 27 m. m., the focal length is 185 m. m. If the latter is divided by the former, one will obtain $\frac{1}{7}$. This number serves as comparison; by squaring the same, that is multiplying $\frac{1}{7} \times \frac{1}{7} = \frac{1}{49}$. In the Euryscope, however, the diameter divided by focal length is equal to $\frac{1}{6}$. This number squared is $\frac{1}{36}$. The light-powers are now in exactly the same relations as the squares, that is, aplanat to Euryscope, like $\frac{1}{49}$ to $\frac{1}{36}$ or 36:49, nearly as 2:3.

The Euryscope is therefore $1\frac{1}{2}$ times as strong in light as the older aplanat.

From this example it can be easily recognized how important the focal length is for the determination of the value of an objective.

The hydroquinone developer gains here every day rapidly in popularity. Several large establishments have introduced and use it now exclusively. The best formula is the one with carbonate of soda (not bi-carbonate), which I already have published. For short exposures stronger developers have been recommended, for instance, with carbonate potassium and caustic potassium. These two substances have only the defect that they easily cause frilling of the film. To avoid this, the plate is immersed after development in a saturated solution of chloride of sodium. The mixtures with caustic potassium also will not keep very long. But there may be cases where both are of advantage. Mr. Battin, who develops exclusively with hydroquinone, writes to me:

If the hydroquinone developer is applied in the formula as given by me:

Sulphite soda	40	grams.
Hydroquinone	5	"
Potassium Carbonate	75	"
Water	900 to 1000	"

The addition of about 5 per cent. of a 40 per cent. caustic potash solution shortly before developing will act highly accelerating; that this method is decidedly to be preferred to the application of pure caustic potash.

The potassium carbonate in the formula can also easily be replaced by caustic potash, and also in this case will the solution remain clear by the preserving action of the sulphite of soda.

The action of the caustic potassium is in each case of such a great advantage that everybody who has tried it once will not change again.

When preparing the developer it may be recommended to dissolve first the sulphite of soda and then the hydroquinone. The solution will then remain quite white and any coloration will be avoided.

For instantaneous pictures the hydroquinone developer might inaugurate a new era, and with a good light and small diaphragms they will be obtained well exposed, and even with a bad light one will be enabled to make pictures, which, until recently, it was an impossibility to take. We will not be forced, anymore, to look after extra highly sensitive plates, which are never clean, and will rather use the cleaner plates of medium sensitiveness.

BERLIN, August, 1888.

THE BRITISH CONVENTION.

[*By our Special Correspondent.*]

AMERICAN photographers appear to have met in "convention" more or less regularly since 1869, and it was doubtless their example which prompted that witty Scottish amateur, Andrew Pringle, to propose (in the pages of the English trade journals) in January, 1886, that Britishers should "go and do likewise."

The idea was practically worked out by two Londoners—J. Traill Taylor (editor of the *British Journal of Photography*), and J. J. Briginshaw, and the first general meeting was held at Derby in July, 1886, when about seventy members were present.

At the second meeting, held at Glasgow in July, 1887, the membership had increased to two hundred; while the third annual meeting (now just concluded), held at Birmingham from July 23d to 28th, saw a muster-roll of three hundred members. Continuing at this rate we shall soon overtake our American prototype.

Birmingham has the reputation of being the most enterprising town in England. Its municipal motto is "forward," and its photographers—both professional and amateur—bestirred themselves nobly on this occasion.

The headquarters of the Convention was the Masonic Hall, a fine building in the very center of the town. The principal room measures about 80 x 40 feet, and its walls were well covered with a selection of the best professional work. As a charge for space was made at the rate of sixpence per square foot, amateurs rather held aloof. As neither prizes nor certificates were awarded, it was rather hard on amateurs—who had nothing to gain—to expect them to pay carriage both ways, and pay for wall-space in addition. The show of apparatus was a good and extensive one. During the day time the exhibition was open to the public at a charge of sixpence, and about five hundred persons paid this sum at the doors.

The conditions of membership are very simple: any one desiring to be a "Conventioner" has only to send his five shillings (annual subscription), to the Honorary Secretary (all offices are honorary), and he thereby becomes a "full private" in the photographic corps. A printed programme of sixteen pages, including a map of Birmingham and eight maps of the districts to be visited, was issued to each member.

The proceedings of the Convention commenced on Monday evening, July 23d, with a soiree, at which addresses were delivered by Jerome Harrison and

J. Traill Taylor, while the Mayor of Birmingham—himself a calotypist as far back as 1854—welcomed the visitors to the town. Dr. Hill-Norris showed some specimens done by his new collodion process, which is to unite all the advantages of collodion with the rapidity of gelatine. The fact that the foreign patents have not yet been secured, rendered it impossible for the learned doctor to go into the details of the process, but the specimens which he exhibited were very promising. It will be remembered that Hill-Norris was the inventor of the first (collodion) dry plates, sold commercially in 1856. The process by which the "Hill-Norris plates" was produced was kept secret, but there is little doubt that they contained silver bromide in collodion, coated with gelatine.

At this opening meeting there was also a good lantern display, and refreshments were provided by the local society.

A feature of the lantern work was that each evening during the week pictures were shown illustrating the excursions to be undertaken on the succeeding day.

As for the rest of the meeting the programme was somewhat as follows: Twelve excursions were arranged, three on each day, and there was an alternative route for each excursion. In this way twenty-four parties were arranged for, each with its own local leaders well acquainted with the ground. The places visited included all the notable spots in the Highlands, such as Stratford-on-Avon, Warwick, Coventry, Kenilworth, Oxford, Lichfield, Dudley, Shrewsbury, etc. Most of these lie within less than an hour's railway ride of Birmingham and as—by the method of subdivision indicated above—each party was of moderate numbers, some good work was, it is believed, done. On Wednesday all the principal factories and buildings of Birmingham were open to the visitors, who were conducted by local guides.

Returning to Birmingham each evening about seven o'clock, the excursionists all met at the headquarters an hour later to hear papers read, and to discuss them; this part of the work being carried on till 10 or 11 P.M.

The subject which received the largest share of attention was orthochromatic photography. Mr. B. J. Edwards, the holder of the patent for the manufacture of (what he prefers to call) isochromatic plates, read a paper, which was very warmly debated, but a still greater success was secured by Mr. C. H. Bethamley, whose extempore lecture on the same subject was illustrated by a large number of lantern slides, taken from orthochromatic and from ordinary plates exposed on the same subjects, under conditions calculated as nearly as possible to give the best results on each plate. These slides certainly showed that the "ortho" plates rendered foliage far better than the ordinary. Mr. Bethamley uses a yellow screen in front of his "ortho" plates, and gives an exposure from six to twelve times longer than with ordinary plates. Mr. Edwards declares that with his plates the yellow screen is unnecessary.

We give a complete list of the papers, etc., read, with the authors' names.

W. Jerome Harrison, opening address; J. Traill Taylor, opening address; M. Pollack (Mayor), opening address; Dr. Hill Norris, New Collodion Plates; W. Bishop, Magnesium Light and Photography; E. Dunmore, Size and Shape as Factors in Artistic Representation; W. H. Warner, Plea for Greater Vertical Height in Stereoscopic Slides; B. J. Edwards, Eosine Process of Isochromatic Photography; G. W. Webster, Carbonate of Soda Protection for Sensitized Paper; T. Bedding, The Negative Image; M. Moore, Pizzighelli's New Platinum Process; Max Jaffé, Negatives for Photo-Lithography and Surface Block Printing; C. H. Bethamley, Orthochromatic Photography.

Besides the above thirteen "orthodox" papers and addresses, we must not omit to mention a most eloquent account of the present state of Astronomical Photography, delivered on Thursday evening by the Rev. Father Perry of Stonyhurst Observatory. This came as an impromptu interlude, but it was really one of the features of the meeting.

The annual dinner was held on Friday evening, July 27th, at the Grand Hotel, when about one hundred members were present. It was followed by a capital smoking concert.

At the "business" or general meeting, which was held on Saturday morning, some important work was done. The rules were revised; London was selected as the meeting place, and Andrew Pringle as the President for 1889. A Committee was appointed to consider the subject of "Standard screws and lens fittings for cameras." Finally several groups were taken as mementos of the meeting, and the members separated.

The Birmingham Convention must be pronounced an unqualified success. The weather was somewhat "mixed," but the programme was faithfully carried out, and the local workers—of whom J. H. Pickard as Honorable Secretary deserves special mention—covered themselves with glory. Most of the men who are in the forefront of real practical photography in England were present, and everybody vowed at parting to "be there in 1889."

FLUORINE AND ITS APPLICATIONS IN PHOTOGRAPHY.

BY P. C. DUCHOCHOIS.

Fluorine, on account of its great affinity for all the metals to which it unites directly, and its destructive action on glass and porcelain, can be isolated only with the greatest difficulties. Frémy succeeded to effect its dissociation from potassium-fluoride by means of electricity. Prat seems also to have isolated it in employing a recipient of fluor-spar.

It is described as a gaseous element, heavier than the air, colorless, fuming in the air, decomposing water, and smelling like chlorine, of which it possesses some of the properties, such as bleaching organic matters and decomposing the bromides and iodides. However, most of its physical and chemical properties are likely unknown, for it is difficult to keep it for any length of time.

No combination of fluorine with oxygen is known. With hydrogen it forms an exceedingly corrosive compound, hydrofluoric acid, prepared by heating fluor-spar (calcium-fluoride) with sulphuric acid in a platinum retort connected with a receiver of the same metal placed in a powerful frigorific mixture, into which the acid—which is gaseous at common temperatures—is liquified. In that state hydrofluoric acid boils at 60 degrees, freezes at about 4 degrees Fahr., emits white fumes in the air, and when poured into water it unites with it with great energy, evolving considerable heat. It should be handled with care, for its action is very corrosive; a drop falling on the skin produces a painful ulceration long to heal. Its fumes are suffocating and dangerous to breathe. Ammonia at once combines with it, and can, therefore, be used to neutralize its fumes, but, as a remedy, it should not be depended upon, for the soluble fluorides are as poisonous as the acid itself. The best antidote is calcium chloride, followed by emetics.

Hydrofluoric acid attacks all the metals with the exception of lead, mercury, silver, gold and platinum. It has no action on the metalloids, boron and silicium excepted. Its affinity for the latter is remarkable; it decomposes all the silicates.

It is on this acid action that is based the engraving processes on glass, which is a compound of various silicates.

Many fluorides are soluble in water. They are obtained by the direct action of hydrofluoric acid on the metals, or by neutralizing their oxides with the acid. The fluorides of the alkali-metals (potassium, sodium) and ammonium have an alkaline reaction and slowly attack glass, which is thereby dispolished. Under the influence of heat this action is more rapid.

Sodium fluoride has been recommended by F. Scott Archer in the iron developer, employed for rapid exposures in the wet collodion process. The formula is as follows :

Ferrous sulphate	7½ drams.
Sodium fluoride	25 grains.
Glacial acetic acid	3 fl. drams.
Formic acid	1 fl. dram.
Alcohol	2 fl. drams.
Water	1 pint.

On the suggestion of Blanguart-Evrard, it was also employed in the calotype, albumen and collodion processes to introduce silver fluoride in the sensitive film as an accelerator. It is doubtful whether any advantage can be derived from it; moreover, silver fluoride is very soluble in water. No precipitate is formed when an alkaline fluoride is added to a silver nitrate solution.

To engrave on glass, several processes are employed in manufactures. Generally, a thin coating of wax, dissolved in four parts of turpentine, is applied on the plate, and a design placed behind it is counterdrawn by removing the wax with a pointed tool. The plate is then placed over a lead tray containing a small quantity of finely-powdered fluor-spar and sulphuric acid, to form a thin paste, when, by slightly heating, gaseous hydro-fluoric acid is evolved, and in a few minutes etches the glass on the parts not protected by wax.

When an original design is drawn, some bitumen is dissolved with the wax, and the plate placed upon a sheet of paper in order to see the drawing white on a tinted ground. Another method consists in pressing into perfect contact with the plate a pattern waxed both sides, and to slightly soften the wax by heating the plate over an alcohol-lamp in order to make it adhere everywhere. The whole is then submitted to the fumes of the acid, as above explained.

Good results are also obtained by applying on a finely ground glass and opal a pattern—lace, tulle, lace-paper, etc.—previously imbued with a greasy substance, and removing it after having carefully softened the waxy substance by heating the plate, so that it leaves its sharp, greasy impress thereon. In this case, a dilute solution of hydro-fluoric acid is poured on the plate, forming a tray by bordering it with wax; or, if more convenient, powdered fluor-spar and sulphuric acid are spread over the plate, letting the action proceed for a certain period. The engraving obtained by these latter methods is transparent on an opaque ground, for, what is remarkable, by etching with the fumes of the acid, the design is opaque, whilst it is transparent by dissolving the glass or other material with a solution of the same.

Similar processes are employed to engrave on glass-ware—cups, goblets, bottles, etc.—but the object is then dipped in the dilute acid, poured in a gutta percha vessel, taking care to protect by a stopping-ground—shellac or bitumen varnish with wax—all the parts which should be reserved.

Although good etchings are made in manufactures by the processes just described, none, however, can be compared for delicacy of details and artistic effects to those which may be produced by photographic processes, using a negative or a transparency, according as the etchings should be made on ground, opal or ordinary polished plate glasses, and, also, according to the method employed for etching. When the subject is taken from nature, or when an engraving in aqua tint or a lithography is copied, it is of course necessary to convert it into a photographic image in lines or dots. Several methods can be devised for that purpose. The following, which is also employed to obtain photo-typographic tint blocks. is quite effective. It consists in placing between the disks and the plate prepared to receive the impression before etching, a print in straight, dotted or crossed lines, 100 to 150 to the square inch—obtained from a copper plate or a box-wood block cut by machinery. These prints should be made on tracing paper or on collodion films.

To engrave it it is best to select a glass ground depolished by hydrofluoric acid, which produces a grain much finer than that obtained by any other means. The reason of selecting such a glass is that its surface can be netted like a lithographic stone or a grained zinc plate, and retain moisture for a certain period, which is quite important, as will be seen further on.

The plates are prepared with a layer of bichromated albumen, upon which the impression is formed, or a carbon print may be developed on its ground surface.

First process.—Beat to a thick froth the whites of, say, three eggs, 90 minims, of concentracted aqueous ammonia and 45 grains of potassium bichromate finely powdered. Let settle for a few hours and decant the clear liquid, filtering it through flannel. This solution keeps well in the dark for three or four weeks.

For coating, provide a round wooden stem about 8 inches long, 3 or 4 inches in diameter, and cut at one end in the form of a cup, upon which should be adapted an india rubber ring, the whole forming a pneumatic holder. Upon this fix the plate firmly, wet its ground surface under a tap, let it drain and flow twice over it in opposite directions, the bichromated albumen, pouring off the excess in a vial. This done, tilt the plate to distribute the liquid accumulated at the edges, and taking the holder between the hands make it revolve slowly at first, then more rapidly, so as to leave on the plate a thin and even layer of albumen. Detach it now, place it on a levelled stand in the dark room and let the film dry spontaneously. The plates should be prepared the day they are wanted for use, for in drying the bichromated albumen becomes insoluble in the dark in a short period.

The plate is now placed on a transparency with a clean plate on top, interposing between them the tracing paper printed into lines, as it has been explained, when it is exposed for about a minute in sunshine, 10 to 15 in the shade, and even for a longer period, according to the intensity of the light, for the parts acted on should be made insoluble through the whole thickness, otherwise the albumen would dissolve in the subsequent operation. After the insolution a printer's roller charged with ink is passed over the albumen film, so as to cover it with a very thin layer of soft diluted greasy ink.* The plate is then immersed in cold water, where in a certain period the albumen dissolves in the parts not acted on, carrying the ink with it. Sometimes, especially when the ink is a little thick, it is necessary to assist the development by rubbing the film with a soft rag under water until the lines stand perfectly clear.

After rinsing and drying, the plate may be etched by flowing diluted hydrofluoric acid over it, but it is advisable before so doing to pass again the roller, charged this time with hard ink, in order to well protect the reserve from the action of the acid. For that purpose the plate must be slightly wetted with a sponge imbued with gum water, which latter, being retained by the grain of the ground glass, prevents the ink from adhering to the clear glass. Indeed, from a plate so prepared, prints can be pulled out as easily as from lithographic stones or zinc plates.

Second process.—Develop a carbon from print from a transparency on the ground surface of the plate, immerse the proof for a minute in a 2:100 solution of potassium bichromate, let dry, expose successively both sides of the plate to sunshine, wash out the bichromate, and when the film is dry, ink it and proceed as above explained.

[*From Photographisches Wochenblatt.*]

THE COLORS IN PHOTOGRAPHY.

BY F. STOLZE.

(*Continued.*)

AFTER having thus considered the arrangement of the spectrum, we will now look into its other optical properties. That the colors of the spectrum combined give a white light, we not only infer from the analysis of the same, but experiment shows also, that a condensing lens unites again the objective spectrum to white light. If we try now to mix several colors of the spectrum by putting into the screen, upon which it was collected, several slits of adjustable width and position, it will soon be found that the colors are in a peculiar relation by pairs. Any two of these united will always give a white light, which for the eye is in no way different from that mixed by all colors, although it can be analyzed again through a prism, giving only these two colors, forming the base. Two such colors, which unite to white, are called "complementary colors." Helmholtz has made up the following table, in which, for a more distinct designation of the relative colors, the wave lengths in one million parts of a Paris inch have been added:

COLOR.	WAVE LENGTH.	COMPLEMENTARY COLOR.	WAVE LENGTH.
Red	2,425	Green Blue	1,818
Orange	2,244	Cyan Blue	1,809
Gold Yellow	2,162	Blue	1,793
Gold Yellow	2,120	Blue	1,781
Yellow	2,095	Indigo Blue	1,716
Yellow	2,085	Indigo Blue	1,706
Green Yellow	2,082	Violet	from 1,600 down

This table is very interesting, because it shows that for the long distance of the spectrum from violet to indigo, with differences in the wave length of 106, the complementary colors will fall all into yellow; with differences of only 13 in the wave length, the difference from red to gold-yellow, is only 163; that of the complementary green-blue to green, only 25. For pure green there is no complementary color in the spectrum; with purple, which is a mixture of red and violet, they will unite to white.

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* The ink, diluted with turpentine, can be applied with a pad of chamois leather when a roller is not at hand.

But besides this there are remarkable differences. The light intensities of two colors, which unite to white light, do not always appear even to the eye. This takes place only by mixing orange and cyan blue, while red, violet and indigo blue appear darker than the complementary colors of green-blue, green-yellow, and yellow. The most saturated color is violet, followed by indigo, red and cyan blue, orange and green, finally yellow.

If two colors are mixed now, which are not complementary colors, a composite color will appear, which is nearer to the white in proportion to the distance of one color from the complementary color in the spectrum.

The less this is the case, so much more saturated is the color mixture.

The result can be seen best from the following table, taken from Helmholtz's Physiologic Optics:

	Violet.	Indigo Blue.	Cyan Blue.	Blue Green.	Green.	Green Yellow.	Yellow.
Red.	Purple.	Dark pink.	White pink.	White.	White yellow.	Gold yellow.	Orange.
Orange.	Dark pink.	White pink.	White.	White yellow.	Yellow.	Yellow.	
Yellow.	White pink.	White.	White green.	White green.	Green yellow.		
Green yellow.	White.	White green.	White green.	Green.			
Green.	White blue.	Water blue.	Blue green.				
Blue green.	Water blue.	Water blue.					
Cyan blue.	Indigo blue.						

The influence of the above specified saturating degree of the colors shows itself here also, as they cannot be mixed in equal light proportion, to obtain the mentioned composite colors, but according to their saturating degree, the more intense color being required of less brightness.

If these composite colors are again mixed, no new colors will originate, but only color tones approaching white—this being the case with a large part of the above—as each color can also be brought near to the white by increasing its intensity. The most complete result is obtained with the violet, the most incomplete with the red, while the other colors stand between them according to their succession in the spectrum.

Concerning the colors which we generally designate as "broken," their character rests essentially upon inferior light power, connected with a whitish tone of the colors. Thus we call whitish-red, yellow and green, as soon as their light power is inferior or low, reddish-gray, yellowish-gray, greenish-gray, etc.; certain saturated colors, however, we designate also (when they are of very inferior light power), with the same name as the proper broken colors, that is a weak red-yellow and green, as red-brown, brown and olive-green.

Black, finally, although produced by absence of all light, has still to be designated as a real color, because a positive process of the nerves is connected therewith. This can be proven distinctly; we know quite well, for instance, with closed eyes the extension of the black visual field, and do not imagine that it reaches behind us.

Quite different results are obtained by mixing coloring matter instead of the spectrum light, or by letting the light pass through diaphragms of different colors. While for instance (as can be seen in table No. 2) it is impossible to produce by mixture of spectrum-yellow and spectrum-blue, another color but white, for example, whitish-green, we obtain excellent saturated green colors by mixture of yellow and blue pigments, yellow and blue liquids (provided that they are of no contrary chemical reaction), as well as by placing yellow and blue glasses upon each other. Otherwise spectrum-red and spectrum-indigo-blue will give us a magnificent carmine-red, while the corresponding paints of vermilion and ultramarine gives only a reddish or bluish-gray. Upon what is based this remarkable difference?

Next we observe, that in the composition of the spectrum colors the composite color is always lighter than its component, provided, of course, that it covers the same surface. By mixture of pigments and liquids, on the contrary, and also with colored diaphragms, tho composite colors are always darker than the original ones. This circumstance leads us to the recognition of the cause, upon which both phenomena (appearances) are based. While the mixture of the spectrum colors is based upon an addition of light, the others are the consequence of a subtraction of light. For the latter kind of color mixture, which, by rights, does not deserve this name, we will now, by way of an example, take two colored glasses, and shall select a blue and a yellow one. The yellow glass admits the passage of the yellow rays completely, and the green, orange and red rays pretty completely, while the blue and violet rays are absorbed; the blue glass, on the contrary, absorbs the yellow, orange and, to the greatest extent, also the red rays. If, therefore, both glasses are placed one behind the other, the green light only will pass through both without obstruction; but in this case it is not composite color at all, being green—spectrum green. The presumably so produced color mixtures depend, therefore, only upon the fact that the other colors are withdrawn from a mass of light which contained the required color as a simple spectrum color, that is, the light is darkened correspondingly.

While it is, generally, very easy to produce color-mixtures by mixing of pigments and liquids, or by colored glasses, the actual mixture of colors offer difficulties, because it requires larger apparatus, or the method to be pursued is not sufficiently known. We will, therefore, consider the means a little closer which are at our disposition for this purpose.

(*To be continued.*)

METAMORPHOSES OF THE BLUE PRINT.

BY D. T. HUNTSMAN.

Chemically, the image of a blue print is ferro-cyanide of iron. It is a per-salt, and consequently has no reducing power like the proto-salts of iron usually have, notably the proto-oxalate. If the print is treated with a powerful reducing agent, it is reduced to proto-cyanide, a white insoluble compound, that rapidly turns blue again by absorption of oxygen.

If after treating with the reducing solution, which must be acid, the print is washed and placed in a bath of gold or silver, the image reappears of a dark color by the reduction of the gold or silver to a metallic state; this is a true toning process. Acid oxalate of iron, proto-salts of tin, proto-salts of chromium, hypophosphites, I have used with more or less success to reduce the blue image. The greatest difficulty is in washing out the reducing agent without oxidyzing the image before placing it in the toning-bath.

Whenever a blue print is treated with any solution having an alkaline reaction, the image is changed to red oxide of iron. When treated with a slightly alkaline solution of gallic, tannic or pyrogallic acid, the ferro-cyanide is converted by double decomposition into tannate of iron (writing ink) ; but tannate of iron is soluble in water, and the image partly dissolves, blurrs and stains the paper. Prints so treated can be cleared up and rendered presentable by a careful treatment with tartaric acid or a tartrate.

It is likely that among the numerous vegetable compounds resembling tannin or alizarine, some one will be found that will produce an insoluble compound of a proper color with iron; when such a one is found the problem is solved. Alizarine is described in the chemistries as producing a precipitate with iron salts, but with the sample I had I could obtain no results whatever.

Alkaline polysulphides produce a beautiful dark green image of iron bisulphide, which rapidly oxidizes on exposure to the air, leaving a faint picture of iron oxide and sulphur. If the sulphide is treated with gold or platinum the metal is reduced, and the picture is then permanent. The monosulphides make the image black monosulphide of iron, which is not so easily oxidized, but reduces gold with more facility than the bisulphide. Thio is prefixed to those compounds in which sulphur replaces oxygen. Thiosulphides are metallic sulphides, combined with an alkaline sulphide and are soluble in water. By double decomposition the blue picture is metamorphosed into thioarsinate, thioantimoniate, thiomolybdate, etc. The thiosulphide oxidizing in the drying, leaves simple sulphide of antimony, etc., which have no great affinity for oxygen, and are proportionately staple. In all of the above described reactions the iron is the essential factor. There are as many more in which the cyanogen can be made to play the principal role. If the print is treated with ammonio nitrate of silver, an image of ferrocyanide of silver will be produced. The ammonia nitrate can be removed by thorough washing, and the silver image developed by ferrous oxalate, which will be sepia to black if the developer is alkaline, and a fine green black if it is acid. This process gives permanent prints of very desirable colors for certain classes of work. The only drawback is the difficulty of completely washing out the silver solution.

Ammonio oxide of copper tones the print a dull blue gray. It is very easy to wash out the copper solution. If the print is now immersed in a strong reducing solution, an image of fiery-red metallic copper is formed. This image tones with the greatest ease in gold, silver, platinum. Though somewhat roundabout, this method is capable of producing fine results.

These are only a few of the metamorphoses that the blue print has undergone in my hands since I commenced to experiment in photographic printing processes. All who have time to undertake such a course of experiments may be sure of one valuable result, viz., practical knowledge and skill in chemistry.

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FATHER (trying to read the paper): "What was that awful racket in the hall just now?" Mother: "One of the children fell down the stairs." Father (irascibly): "Well, you tell those children that if they cannot fall down stairs quietly, they won't be allowed to fall down them at all."

LOOKING BACK; OR, THE OLDEN DAYS IN PHOTOGRAPHY.

BY H. H. SNELLING.

In looking back upon this early period in the history of photography, we find it claiming the attention of our most learned scientists as an aid to the study of the sciences, particularly in astronomy and terrestrial phenomena, anatomy and diseases, and proved of great aid in their study. The most notable practical Daguerreans, who devoted most of their time in investigating photography as an aid to science and the fine arts, and gave the most practically valuable results, were Messrs. Whipple and Black, of Boston, who spent much time and money in their experiments. They accomplished feats in telescopic photography that were a marvel at that time, and which gained for them a high reputation throughout the scientific world. We are indebted to them largely for the position that photography took in its application to scientific investigation, particularly after the discovery of the collodion film.

One of the most notable and important discoveries made during the first decade in photographic history was the application of blue glass to skylights and in the camera, as mentioned in our article on the "Relation of Colored Glass to Photography and the Eye," in your Annual of this year, a subject to which we shall return as soon as our eyes will permit; a subject admitting of much further investigation, particularly in relation to the eye. The fact that blue glass cuts off the retarding action of colored rays was a great improvement in time and worth thousands of dollars to the practice of the art, yet our suggestion brought us no practicable acknowledgment; it cannot even be set down as the counterpart of poor Archer's great discovery. Freely it was given and freely it was received, but it is something to have the pleasure of giving and making others happy. Like Paul, the aged, I have done a little boasting here; I suppose it is the old men's privilege; anyhow it seems to be their infirmity.

Among the many Daguerreans who flourished at this time and had a reputation for excellent and artistic daguerreotypes, we certainly should place A. J. Whipple, of Boston, as the head of the class, because he not only executed the best of pictures, but because he devoted so much of his time and money in experimental photography for its improvement and advancement. His services in this respect deserve special mention, and a first place in our record of the men who saved the character of the art from the false position it would have taken in the hands of the charlatans who infested the country.

Mr. Whipple was born in Grafton, and at an early age manifested his love for study, and his pocket money went for books instead of for toys, confectionary, cigars and other indulgences common to boys. Chemistry was his favorite branch, and he pursued it indomitably. The announcement of the discovery of Daguerre in this country at once fascinated his mind and set his wits to work in devising the way by which he might practically test it. With a candle box for a camera and a silver spoon for a plate he made his first experiments.

At the age of eighteen, being ambitious as well as studious, he left his country home for Boston to seek a business congenial to his taste and aspiration.

A casual acquaintance with a gentleman met in a store and who was searching for chloride of iodine, gave him his start in business. The gentleman told him that he had searched all Boston for the chemical without finding it. Mr. Whipple offered to make him some. The gentleman accepted the offer gladly. Mr. Whipple went to work, and in a few hours it was delivered and paid for.

This was the first money earned by his chemical knowledge and was the first step to his success in business. The daguerreotype was yet a new thing and the chemicals used in it were difficult to obtain. From this time he supplied the Daguerreans of Boston with this chemical, making good profit. But his health soon began to fail and he was obliged to relinquish his manufacture of chemicals for other business. He decided upon the Daguerrean art and devoted his time and talents in making miniatures. His thorough chemical knowledge gave him great advantage over others, and the name of Whipple was associated with all that was excellent in daguerreotypes. Good artistic taste, a correct eye and a ready mind to correct difficulties and detect causes for defects, he was enabled to put forth such uniformly perfect work that he was resorted to by the lovers of fine art and the most intelligent people of Boston. Mr. Whipple also commended himself by his urbanity and pleasing manners and made hosts of friends. From this time his success was assured.

Mr. Whipple's business became so great that he found the manual labor portion of the process become irksome and often vexatious, and he determined to use steam. He procured an engine and adapted machinery to its use. He was well pleased with the result. It was the introduction of this system that gained for him the high reputation he enjoyed, for his plates were better and more uniformly cleaned than by hand, for on a perfectly clean plate the excellency of the picture depended more than on other parts of the process. The beautiful crayon daguerreotypes, which became popular with people of taste, owed their origin to Mr. Whipple.

He was the first, also, to make daguerreotypes (afterwards called ambrotypes), for which pictures he obtained letters patent from the United States Government. If we remember aright, he afterwards gave these inventions to his brethren in the art.

Mr. Whipple, however, did not confine himself to catching the image of the "human face divine." He applied his favorite art to reveal the wonders of the universe, celestrial and terrestrial. By his skill the microscope and telescope were made to give to the daguerreotype plates the secrets of celestrial space and the world of animalcule, placing before scientists objects not known to them before. By devoting his talents and skill in this direction he contributed largely to the advancement of science. The achievements of Mr. Whipple in this direction were as wonderful as the objects themselves, and among scientists his name will ever be remembered with grateful praise.

Mr. Whipple's daguerreotype of the moon was a great achievement. The attempt was made under great difficulties, but his indomitable Yankee "go-aheadedness" would not admit of an impossibility in anything he undertook, and so the moon was daguerreotyped with remarkable accuracy. This was done in the observatory of the Cambridge (Mass.) University for that institution. It created great excitement, not only among professors in our colleges here, but among the scientists of Europe. From royal institutes in Europe and our own colleges Mr. Whipple received the highest commendation.

We will pause for a moment to say that as great as this achievement was, it was surpassed subsequently by Mr. Whipple on the collodion plate, when he obtained a beautiful and perfect image of the orb on a plate fourteen inches square. One of our professors in astronomy said that it was so clear and accurate in detail that he could classify the rocks of which it is formed.

Of course, the persevering and determined will of such a man brought Mr. Whipple in request among scientists, and he has made many more attacks on celestial bodies and brought their images to earth to enrich science and art.

Shortly before the introduction of the collodion process, patents were taken out both in England and America for a process on glass with an albumen film called cristalotype. Mr. Whipple purchased the American patent, and sought to introduce it into this country. He worked the process himself quite successfully, making some very good pictures of large size. He relinquished it, however, when the excellency of the collodion film was manifested.

Daguerreotyping by artificial light became a matter of investigation, and various experiments were made in England, France and this country with more or less success, sufficient to give hopes of making it practical for night work. Among the experimenters was Mr. Whipple, who, probably, surpassed others in his attempt. He used the Drummond light. The specimens shown were very good, much better than a great many sun pictures made at that day. The outlines were very strong and dark, giving great boldness to the figure, but they were wanting in softness of tone and in expression, and they did not possess sufficient of the required gradation of light and shade. These defects, it was thought, might be overcome, and it has been claimed that they have been by the electric light.

The enterprise of Mr. Whipple was always on the alert for new things in photography, and he was generally the first in this country to seize the suggestions of European writers and to follow the experiments of foreign photographers, when after due consideration he thought them practicable. In this respect his productions were always superior to those of the discoverer, which fact gave rise to the fact not only here, but in Europe, that American photographers excelled the European in paper photography as well as in the daguerreotype.

The years 1849 and 1850 were most prolific in discoveries and inventions in photography, mostly in France. The superiority of American artists over those of Europe could not be disputed, but it was a matter of surprise and comment, that among so many excellent practical Daguerreotypists that we possessed in this country, none made themselves a name as discoverer of any process or improvement worthy of more than a passing notice in that day, with few exceptions—Mr. Whipple being one of them. Our Daguerreans were content to rely upon European investigators, and there were men who made it their business to appropriate these European processes and formulas, and peddle them about the country to Daguerreans for whatever price they could get. The most done by the American Daguerrean has been the modification of European inventions.

We once asked some of our most intelligent Daguerreans why this fact existed, and the reply was that experiments were expensive and required much time, time that was needed for their practical work; we are not a scientific set. Yet, the assertion that nothing new came out of the American mind in those bygone days was not altogether true. Besides Mr. Whipple's contributions, there were others, of which we shall speak hereafter, that made European inventions—otherwise of no avail—practical. As there has been considerable controversy on the production of microscopic pictures in times past, and for better understanding of these articles, permit me to close this sketch of Mr. Whipple with the following letter, giving the origin and progress of microscopic daguerreotypes in his hand:

"Friend Snelling * * * * * * * In 1846, it was suggested to me by the Rev. S. Adams, of this city, that it might be possible to daguerreotype the image of the microscope; he was in possession of a fine 'Oberhausen,' which he loaned me for the trial. By removing the lenses from the camera and substituting the microscope in its place and adjusting the object properly for seeing with the naked eye, a clear but very faint image was found projected on the ground glass, the light being so weak that it was hardly possible to focus it. But doing that as well as I could, and submitting a plate to its action, giving it an exposure of one and a half hours, then marvelously long, great was my astonishment and delight when lifting the plate to take a peep, I saw a clear and distinct image there, thus demonstrating the possibility of indelibly fixing the forms of nature now invisible by our unaided vision. The object tried was the mandible of a small spider, so small that it could only be discerned as a mere speck by the naked eye; it was magnified on the plate to cover three-fourths of an inch surface, and every part was reproduced in bold relief, showing its little comb-like appurtenances to perfection, equally as well as represented to the eye in the instrument; the only defect in this first proof was a small light spot exactly in the middle of the plate, which we found was caused by a prism used in the microscope to reflect the image at right angles. On removing that the next proof was without a blemish. My next experience was with test object scales of the tepizum; and truly they were a test for daguerreotyping. I could do every part well enough but the cross-strings, which are only brought out with instruments of the very best manufacture; when so high a power is used as is here necessary a great loss of light is experienced, requiring an exposure of many hours, which every one acquainted with daguerreotyping knows is not favorable to fine results. I succeeded in doing them with the finest instrument as well as a second rate one would show them to the eye. I find a much better way for ordinary purposes, instead of a microscope with eye pieces, is to use simply a double or treble achromatic of a combined focus, of from one-fourth to one inch in length, according to the character of the object, and the extent desirable to magnify; a section of woody fibre, for making an eighth of an inch in diameter, an image of which it would be desirable to impress on a plate five inches in diameter, I should use a lens of about half an inch focus, and all that is to be done to it is to have these little lenses set in the brass plate, which will screw into the camera when the daguerreotype lenses unscrews, then support the slip of wood to be magnified half an inch before the lens on a little slide prepared to hold it, that can be made to move backwards and forwards a quarter of an inch or so, thereby pointing the camera towards the rim, and having the wood just in the focus of the small lens, a beautiful distinct magnified image of it will be seen on the ground glass of the camera, in size just in proportion as the camera box is lengthened or shortened, and the wood supports on the stand moved nearer to or farther from the lens.

"The brilliancy is greatly increased if the sunlight is condensed upon the object by means of a lens, one about two inches in diameter, and three or four inches focus answers the purpose well, always being careful not to exactly focus the sunlight upon the object; if so it would be singed by the heat.

"An opaque microscopic picture is easily made by condensing the sunlight on the side of the object nearest the little magnifying lenses, instead of letting the light pass through the object, as in the former case.

" By this most simple means it is in the power of every Dagerreotypist to greatly aid the naturalist in his researches, giving him in a few minutes drawings of invisible objects penciled by nature's own hand, which it would be impossible for him to obtain in any other way, and he also possesses himself with an invaluable collection of objects that would be of great interest to the public."

JOHN A. WHIPPLE.

Mr. Whipple's efforts here related were undoubtedly the first successful attempts in micro-photography; at least we know of no other earlier than 1846.

A FAMOUS LADY PHOTOGRAPHER.

BY TALBOT ARCHER.

[IN the "International Annual," the introductory portion only of a sketch of the life and work of Mrs. Julia Margaret Cameron—the friend of Tennyson—appears. By a printer's error the remainder of the article was omitted from the "Annual," and we now supply the deficiency.]

" In vain does the lady of the camera lay before the poet the muster roll of his illustrious fellow victims, who have already sat to her, and urged how successful his friends thought her last study of him, and that the state of the atmosphere is even more favorable to photography to-day than it was when that study was taken.

" Mrs. Julia Margaret Cameron will not win her cause this time, her persuasions being suddenly cut short by the entrance of two gentlemen and a lady. The elder of the former at once arrests your attention by his patriarchal mien, as he stands erect leaning on his staff, his ample white beard and snowy locks flowing down over a blue caftan, suggestive of the eastern land so long his home

" For this is Mr. C. H. Cameron, the husband of our hostess, and a member of the Indian Council, who was for many years resident in Calcutta, where he and his wife were most highly esteemed by Lord Hardinge (after whom they have called one of their sons, who is now in the Ceylon Civil Service).

" Mr. Cameron is a first-rate classic, and he and the Laureate engage in an animated discussion about the respective merits of certain Greek and Latin writers, and the peculiarities of their several styles, while Mrs. Cameron turns to enquire of the younger gentleman how it fares with the poor of Freshwater.

" None can better answer her question, for he to whom it is addressed is Horatio Tennyson, seventh brother of the poet, now resident at the Terrace, close to Mrs. Cameron, who is devoting his life to ministering amongst those 'who are any ways afflicted or distressed in mind, body or estate,' winning the wanderers back into the fold, by showing them he still counts them his brethren in Christ.

" He is the despair of his cook, for not only does he quite forget the appointed meal times, as he lingers hour after hour by the bedside of the sick and the dying, but, should he discover that anything especially dainty is being prepared for his own dinner, he is sure to carry it off to some poor neighbor. On one occasion, a rather ancient and fish like smell being noticed as he approached, he exclaimed, 'Oh, dear me! I was taking a dish of fish to widow B—— yesterday, and was prevented going to her, and here is the fish still in my coat pocket.'

" A subject of common interest to Mrs. Cameron and Mr. Horatio Tennyson is the reading room she has lately established for the benefit of the working men of Freshwater, and to which valuable gifts of books have been contributed, both by Mr. Tennyson and by the lady who has just entered the room, who is none other than Miss Thackeray, whose writings are so much appreciated by the world at large, and whose nobleness of heart renders her so dear to this most intimate circle of her Isle of Wight friends. As the conversation becomes more general, the bright flashes of Mrs. Cameron's wit make you feel how well bestowed was the appellation by which she was known in India, when she formed one of that famous trio of Miss Pattles, named 'Wit, Grace and Beauty.' In the Laureate's brother she has her match, for, like Charles Turner, he is a born humorist, and has a most original and witty way of putting things before you.

"Presently, Mrs. Cameron's thoughts revert to her art, and she proposes a visit to her studio, where her maid, Mary, is preparing to sit to her in a group of the Holy Family after one of the best masters. Modestly veiled and with a mantle of blue thrown about her, all are struck by the resemblance the maiden presents to one of Raphael's Madonnas, though they agree that Mary Regan, another of Mrs. Cameron's 'Maries,' was more strictly beautiful. This Mary Regan was the girl whom Mrs. Cameron found sweeping a crossing at Putney, and whom she took into her own house, teaching her reading and writing as well as housework, and making use of her as a subject in many a charming photograph—notably in that of King Cophetua and the Beggar Maid, which, when hung in Messrs. Colnaghi's window, so much attracted the attention of a young gentleman of wealth and position, that he resolved to imitate King Cophetua and make the Beggar Maid his wife; and he has lately carried his resolution into effect, Mr. Tennyson having lent his carriage to convey the lovely bride to church.

"After watching Mrs. Cameron put the finishing touches to the arrangement of her sitters, her three guests turn to depart, having extracted from her a promise that she will meet them again at Farringdon that very evening.

"I have spoken in the present tense of that lovely June day more than ten years ago, which seems to come back to me as I write, together with many more days and years of the like happy intercourse between the families at Farringdon and Dimbola. In 1878 her mother's heart yearned to see her children once more, and in October of that year she set sail for Ceylon, promising to return to the Isle of Wight speedily, and never again to forsake her dear Freshwater friends. But in the early part of the following year Lord Tennyson received a letter from Hardinge and Henry Cameron, telling how, 'as the day died on Sunday, January 26th, the sweet, tender, gracious spirit of our beloved mother passed away in peace. No death could have been more calm, more beautiful than this. "Thrice blest whose lives are faithful prayers." Her soul was ripe for heaven, if ever soul was. The beautiful tender thoughts of your "In Memoriam," are a solace to us as they have been to many aching, weary hearts. We buried her in the quiet little churchyard at the head of the valley in Bogaliawantalawa, just such a spot as she would have chosen for her rest. So we left her, and returned to the dear father to cheer and comfort him.' In May, 1880, deep black-edged letters from Ceylon were once more put into Lord Tennyson's hands, telling how 'on the eight of this month, my dearest father left us, and, I hope, rejoined my dear mother in the spirit world. When death impresses his sign manual on any countenance, he gives it a great dignity. But his face, so noble and intellectual in life, looked perfectly sublime. We had his body carried fifty miles through the grand mountain and forest scenery which he in life so loved. A grand tropical thunderstorm burst over us as we passed down the mountain side to Dimbola, and it was grander than any military salute of guns, and seemed as though the heavens joined in paying honor to the dead. A coffin, draped in white, placed in a car drawn by two white bulls, took the body as far towards Bogaliawantalawa as the road went, and then 26 coolies carried the coffin in silence to St. Regulus, where he and mother had spent many happy days. The next day we traveled slowly through grand passes and forest, and at five o'clock in the evening we placed him by the side of our darling mother, his wife, friend and companion for forty years. You who knew the entire happiness of our dear home at Freshwater, well know with what bursting hearts we left the loved ones in their grave.'

"The outer world knew Julia Margaret Cameron best as an epoch maker in the history of photography; but much as the inner circle of her friends admired the wonderful studies she made of learned men and fair women, with their Rembrandt-like effects of light and shade, Mrs. Cameron was even more esteemed by them for herself than for her art; since in her they found one who, whilst loving her own family with a passionate affection, and expecting those who loved her to love them all too for her sake, yet, so far from suffering her affections to degenerate into that *egoisme à deux ou à trois*, which is scarcely less utter selfishness because it takes in a family instead of the *ego* alone, she so far entered with her very soul into every concern of those who had the privilege of her friendship that she seemed almost to lose her own personality in theirs, and in the midst of her own deepest griefs and highest joys she was ever ready to rejoice with them in their happiness, or to weep over their sorrows; to aid them with her wise counsel and to sacrifice her time, her money and even her health to serve them. In a word, Mrs. Cameron was a woman worthy of the post she occupied of one of the chiefest among the friends of Lord and Lady Tennyson.

"After the bodily presence of Mrs. Cameron was taken from us, her spirit seemed to linger on in the person of a sister, who had come to Freshwater in order to be near her. This was Mrs. Prinsep, the wife of Mr. Thorby Prinsep, the well known East Indian director."

To so vivid and complete a description there can be but little to add, yet we may also quote one or two contemporary criticisms, written just after her death. "So poor Julia Cameron is dead. She produced the finest photographs that I ever saw. She almost reconciled the artist to the lens. Her faces were not smooth, but copies of the original. She sought force and vigor, and she got it. Sometimes the force and vigor were appalling, as, for example, in her portrait of a mad girl, which frightened one to look at, and haunted one ever after. Her photograph of Mr. Tennyson was more characteristic than any painting I ever saw of the poet laureate. Yet she did not conquor Ruskin, though she did so many of the Ruskinites. She, herself, was an ardent Ruskinite, and worshipped beauty with Hellenic fervor. With no grandeur of contour or feature herself, she would have no one about her, no tirewoman, no kitchen maid, who did not satisfy her æsthetic taste. Her death comes as a surprise."*

Next we quote an appreciative note from the *World:* "The death of Mrs. Cameron will make a sadly sensible gap in a little society, the bonds of which were somewhat closer than those of ordinary friendship. Her absence with her family in Ceylon was not able to relax the affection between herself and the Tennysons, the Harry Taylors, Lockers, Ritchies and Mr. Watts, R. A., all of whom were his friends and all of whom she photographed. Professor Ruskin disapproved of these photographs strongly, but Mr. Watts and Mr. Prinsep used transcendental language in their praise. Even more than photography, female beauty was Mrs. Cameron's passion; her household staff was a dream of fair women; and to her intense delight, a visitor of hers once fell in love with a graceful cook (who used to dust the flour from her arms that she might meet her suitor in the library) and married her. Some ten years ago Mrs. Cameron had an exhibition of her photographs at the Dudley Gallery; and the taker of the shillings, the vendor of the catalogues and the guardian of the umbrellas were girls, of whom the memory haunts me still. She herself was charmingly, hopelessly, pathetically plain, and knew it. She will long be remembered as one of the most original women of her time."

But the chief English paper, the *Times*, contained perhaps the most correct account of this lady and her work: "Mrs Cameron appealed to a wide public by her perfectly original and unique photographic work and subject pictures, in which after a daring fashion of her own, forfeiting the sharpness of definition which ordinary photographers strive for, and which is one of the things artists most dislike in photographic portraiture, and having the advantage of sitters usually distinguished for intellectual gifts or personal graces, she produced a series of heads and groups quite unique in their suggestiveness, the most picture-like photographs certainly which have been given to the world, and some of them among the best extant portraits of their distinguished originals, which included—among a host of other notables—the Poet Laureate, Sir Henry Taylor, Sir John Herschel, Herr Joachim, Mr. Spedding and the Rev. Mr. Brookfield. Mrs. Cameron's singular ardor of enthusiasm, the energy with which she flung herself into whatever she undertook, her rare forgetfulness of self and readiness to help others, endeared her to a wide circle of friends, while her devotion to her family was for her a love which nothing ever diminished."

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* Correspondent of the *Liverpool Mercury*, March, 1879.

Mrs. Cameron was, in fact, the apostle of a school, of which Rejlander was one of the earliest advocates, and of which Dr. Emerson (in landscape work) and W. Adcock (in portraiture) are the latest exponents. Critics called her pictures "fuzzy," and pointed to faults of manipulation, but none could deny the high artistic feeling which pervaded her work. Gold, silver and bronze medals were awarded to her photographs at exhibitions in America, Austria, Germany and England. Large heads (taken direct, with long exposures and open aperture) were her specialty, and she did not object to a little movement on the part of her sitters. She was on terms of intimate friendship with Carlyle, and it is on record that when opening a budget of valentines received from his admirers one 14th of February, the sage triumphantly held up one containing a photograph and exclaimed, "This comes from Mrs. Cameron or the Devil!"

Considering that she had received no scientific training whatever, and probably but little in art, we must admit that Mrs. Cameron fairly earned a right to the respect and admiration of the photographic fraternity. In the present days, when science forms, or ought to form, a part of the education of every school-girl, and when photography has been made so much more easy and simple, we trust that many of her sex will emulate her achievements. As a stimulus and encouragement to them to do so, this notice of a famous lady photographer of the past has been written.

P. S.—It may interest some to know that one of Mrs. Cameron's sons—Mr. H. H. H. Cameron—is now a professional photographer of high repute in London.

SECOND ANNUAL EXHIBITION OF PHOTOGRAPHS.

BOSTON, MAY, 1888.

The Report of the Judges.

To the Committee of Arrangements:

The undersigned, your Board of Judges, have the honor to submit their report.

Believing a high standard of excellence to be the aim of the societies that are holding these exhibitions, the judges have endeavored to give recognition to such work only as seemed to them to come up to that standard.

In some departments were seen examples of a high order of work, in which selection of material, composition, effects of light and shade, and skilful execution were happily combined. They had true artistic feeling, a feature that is wanting in most photographs. Such pictures reveal art possibilities in photography that must have been a surprise and delight to many, and will no doubt exert a strong influence for progress upon all who aim to produce the highest kind of work.

Your jury must express a measure of disappointment in not finding in the department of portraiture examples worthy of high commendation, since in a field so valuable and interesting, much might be reasonably expected. In the opinion of the judges, he who desires to produce fine portraits would do well to avoid the hackneyed methods so common and wearisome, out of which little good is likely to come. He must have some notion of what goes to make a good portrait, and that means cultivation in art. A careful study of photographs from the works of the best portrait painters would be an excellent preparation. Observe how they composed, lightened and modeled their figures—in brief, what was their conception of a portrait.

The artistic possibilities of every subject should be well considered. Technical excellence should not be valued for more than its worth. Many amateurs and most professionals think too much of it. The satisfaction one feels in looking through a good negative should not be ignored, but far greater is the pleasure one derives in contemplating a well selected subject, composed, lighted and otherwise treated with taste and feeling.

It is the art side of photography, then, to which we respectfully urge amateurs to give their best attention. In this direction lies the way to true progress.

We have considered it within our province to discuss only some of the principles which we believe should govern the amateur, leaving to the various societies the settling of questions of technique and processes.

Subjoined is a list of exhibitors to whom diplomas are awarded.*

(Signed), J. EASTMAN CHASE,
J. FOXCROFT COLE,
JOSEPH R. DECAMP,
JOHN DUNMORE,
FRANK RUSSELL.

DRYING PAPER NEGATIVES WITHOUT COCKLING.

To the Editors of the BULLETIN:

IN the BULLETIN C. E. V. writes: "Please tell me how to dry a paper negative without cockling." This is my plan. While the negative is being washed, I clean a glass plate with talc. When the negative is properly washed I place it on the plate, and lightly pass over it a ¼-plate rounded on the edges, and clear the air bubbles. I allow negative to dry, and when thoroughly dry I oil and leave it till when it is required for printing, when I dry off oil and peel off negative, which come off with a surface like polished glass. No cockling.

It may also interest your readers to know the developer I use. To a ½-plate I take six grains pyro, two ounces of water, and soak plate, etc., in it. Of my stock solution (1 ounce water, half ounce ammonia, liq. fort. 880, and thirty grains bromide of ammonium or potassium), I begin with three drops and continue till result is obtained.

With this developer I use Carbutt's plates: Britannia, Edwards, Rouch, Wratten & Wainwright, Stanley, Eastman's film and negative paper, and bromide paper and alpha paper. I have never been unsuccessful.

I would also ask for information. I placed a plate in the frame, having previously placed in front of negative a black mask; I exposed and developed. The picture in oval came out fine. The part covered by disk came out white, and prints through its clearness a deep jet?

Thanking for information contained in BULLETIN, which for last year has given me a lot of valuable information. E. D. M. ABRAHAM.

SCUM ON PRINTS.

To the Editor of the BULLETIN:

IN reading the queries of your correspondence in the number dated January 28th, I noticed particularly the troubles of C. S. B. and A. W. R. Having been bothered in the same way for three years past, I thought, perhaps, my experience might be of use to them and possibly others.

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* These have already been published in the BULLETIN. The above report has only just been received from the judges.—EDS.

Some three years ago I had new rooms fitted up and got my water supply from an unused well, led to the dark room through iron pipes. I then began to be troubled with the scum they complain of. You were right in attributing it to a chloride in the water, but (in my case, at least), the chloride is not strong enough to cause a precipitate in the water, but when the prints are put in the water to wash it is strong enough to cause a slight milky deposit on the face of the print, which, if not got rid of before the print goes into the toning-bath, soon gives the print the appearance of being toned a cold bluish purple, which tone the hypo will destroy completely, leaving the print without tone, but of a dull red color. I tried in almost every way to rid myself of the pest, but so long as I used that water it could not be done, and as I had either to carry water a long distance by the pailfull for toning operations, or use the pump water, I have settled into the plan of sponging the face of each print. By using a piece of glass larger than the largest print, and putting one end in the dish containing the prints, they can be laid on the glass and held fast with the left hand and sponged with the other quickly and safely, without the least harm being done them. In some respects I think the sponging a benefit. I use two changes of water, then one containing a small quantity of salt. They are sponged from the salt water and returned from the glass into a dish of fresh water, thence to the toning-bath.

W. Milliken.

NEWARK CAMERA CLUB.

The Newark Camera Club will make an excursion to Highland Beach, N. J., on Wednesday, September 26th, taking the boat from Pier 8 at 10.15 A.M., and returning by the New Jersey Central Railroad. Other amateurs are invited to join the procession.

OUR ILLUSTRATION.

The picture with which we illustrate this issue of the Bulletin is from another of those charming negatives sent us by Professor S. W. Burnham, of Chicago, who is now at the Lick Observatory, California. The view is an exceedingly pretty one, and makes a very handsome picture, just such a scene as an artist would select for a painting. We hope to have something more of interest from Professor Burnham soon.

BACK NUMBERS OF THE BULLETIN.

We are in need of a few of the numbers of the Bulletin for January 10, 1888. Can some of our friends supply us with these at the original price?

WHAT PEOPLE SAY OF THE INTERNATIONAL ANNUAL.

Compliment you upon the beautiful get up of the volume.

R. L. Maddox, M.D.

It does the greatest credit to its editors and publisher; indeed, it is a book that does credit to photography itself, and one of which photographers of every name and nation may well be proud.

W. Hanson.

"The International Annual" I consider a great success.

GEORGE MANSFIELD.

I have looked at many of the articles and there seems to be a greal deal that is interesting in it.

Hon. J. G. P. VEREKER.

It is larger than I expected, and contains a vast mass of matter.

Rev. H. ALDWIN SOAMES.

Congratulations on the success of the work.

G. V. J. POIRIN.

The new manual speaks well for the efforts you have made and must gratify you.

JOHN HARMER.

I received your beautiful volume this morning. It is edited in a smart, business-like and readable manner. It is printed as no photographic publication has ever been printed before—and illustrated with gems of portraiture.

ADOLPH W. BEER.

It is beautifully got up and reflects great credit on its editors and publishers

B. TINDALL.

The "Annual" is a very considerable success and I hope will continue to be so from year to year.

CHAPMAN JONES.

The Summer Annual is evidently quite a drawing-room volume and a book to aid and enlighten one in the photographic path.

J. CHESTER JERVIS.

P. S.—The "Photophane" of "Dawn" is exquisite.

The photogravure is an excellent piece of work. The photophane seems good.

C. HETHTON LEWIS.

"The International Annual," No. 1, in which you have so admirably succeeded. The number of writers and variety of topics is far beyond all my expectations. You have turned out what is really a standard work of great intrinsic value, which I shall prize highly as a text-book.

B. J. SAYCE.

It is the best collection of readable articles that has been done in this form. It is not overloaded with formulæ, tables and figures, as too often happens.

H. P. ROBINSON.

I think it a very desirable book to own.

ED. F. WILDER.

The matter contained in the book, to the progressive photographer, is worth more than fifty times the price I paid for it.

WM. BELL.

I sincerely hope that the same style of matter will be brought out annually. It will occupy a place of honor in my library.

E. BIERSTADT.

FREDONIA, N. Y., September 10, 1888.

"The International Annual" is full of interest. I have read it with more pleasure and benefit than any similar publication ever gave me. Again I thank you.

Yours,

E. K. HOUGH.

I have been reading "The International Annual" of Anthony's Photographic BULLETIN (for 1888) and must thank you and our dear friend Harrison most heartily for the service you have rendered to the photographic fraternity in compiling a work that introduces us to such a large number of distinguished writers, both in England and America. Surely, it is a great pleasure to commune with such spirits on subjects that occupy no small portion of our time, and with which we must be practically acquainted, if we would be successful in our work. Many of us would not hesitate to take long journeys and spend much time and money for a personal interview with such noteworthy teachers, and yet we often hesitate to make their acquaintance and listen to their most valued thought, when we may do so in our own private study and at small expense. It is often said by some that very little can be learned from books, and this is no doubt true with the class of students whose education is based upon observation and oral instruction, and whose expertness in their work is due simply to constant practice. The best writers might not be able to compete with these in their special work; but this is no valid reason why such writers should never be consulted. It is not their business or aim to be expert in working the processes they record, but expert in describing and portraying these in choicest forms of speech. Our greatest love for Shakspeare is because he tells us things we know, but never could express. For the same reason the Annual above referred to will, no doubt, be often studied by every aspiring student of photography, for in it he will find recorded not only what he knows himself, but the combined experience of many others who have been striving to reach the highest excellence. Thus will he gather about him the most advanced spirits of his day and generation, and, aided by their strength, reach the goal for which he strives. J. B GARDNER.

The "Annual" come to hand, and I have been very much interested in reading it. It is full of good things, and many of the articles are gems of thought and of great practical value. E. M. ESTABROOKE.

It is the best annual published. G. S. BLISS.

It promises to be very entertaining and instructive reading.
GEORGE W. GRAY.

DEATH OF THE DAUGHTER OF DR. E. L. WILSON.

As we go to press we hear the sad news of the death of the daughter of our good friend Dr. Edward L. Wilson, of the *Philadelphia Photographer*. This lady was only married last May, and the future looked full of happiness for her. Alas! Death is always cruel, and her young hopes were destined to be blighted. We offer our sincere and heartfelt sympathy to her bereaved husband, and also to her father and his suffering family. May they have strength to bear the weight of this sad loss, is our most earnest wish.

All communications for the columns of the BULLETIN *should reach us on Monday preceding the day of issue, to insure their publication at that time.*

ANTHONY'S
Photographic Bulletin.

EDITED BY
Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.
and a corps of practical assistants.

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Advertisements should reach us not later than the Saturday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, six, twelve or twenty-four issues.

E. & H. T. ANTHONY & CO., Publishers.

PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

MINNEAPOLIS MEETING—FOURTH DAY.

(*Concluded.*)

Mr. ROCKWOOD—*Ladies and Gentlemen:* I had this report ready last evening, but the President met me, and out of the kindness of his heart said, "Mr. Rockwood, I think you had better wait until the very last thing, as you may want to get out of town very hastily." In regard to Class "B" I will say that it was very difficult to tell which of these two exhibits was the best. But in looking them over the committee thought they discovered a little more originality in the designs of the first and in the carrying out of the same.

The foreign exhibits we have decided upon, but it appears that this German exhibit has just got here and I think it is proper, as the delay was not the fault of the gentlemen who sent the picture, that we wait and see that we do not want to change our verdict. It is just possible that we have made some mistakes in the names, as a great many have put on their business firm names instead of their own.

The *President*—I would like to state that it will be necessary for us to have an afternoon session. It will only take a short time.

The report of the committee having been read, several corrections were found necessary, and it was decided to have the revised report read at the afternoon session.

Meeting then adjourned till 2.30 P.M.

AFTERNOON SESSION, JULY 13TH.

Meeting called to order by the President at 4 P.M.

The *Secretary* not being present the President appointed O. P. Scott Secretary *pro tem.*

The *President*—There is some business that was overlooked in the hurry to get away to lunch. I presume it is the sense of the Convention to have awards for the coming year, and if so it will be in order for some person to make a motion appropriating a certain amount for the committee to use.

W. H. H. CLARK—Of course, I have nothing to say about the awards so far as personality is concerned, as I do not exhibit; but I have been asked by several to present the fact to the association for consideration. A year ago there were restrictions placed on cabinets particularly, and it has been requested to have those restrictions again placed upon the cabinet-size photographs not to have it open to all classes. All the restrictions were taken off last year. This is the sense of a great many.

The *President*—If you have some motion to make, will you please do so?

Mr. MCMICHAEL—I would like to make a motion in reference to the awards next year. Therefore, I move you that $1,000 be appropriated for the awards next year, to be awarded as the Executive Committee may see fit. I think it is best to leave it entirely with them.

Motion seconded.

Mr. LANDY—I think there should be no restriction at all.

The *President*—This is simply appropriating the amount of money. I would like to make one remark right here. I think it is well that the motion is placed in this way, appropriating $1,000 for the Executive Committee to use for awards as they choose. Last year I believe the amount was appropriated for medals. I think it should be left in the hands of the Executive Committee to say whether it should be cups, medals or whatever they thought best. They can tell decidedly better, when the matter comes before them in their meeting, what is wanted than we can, and the conditions might be changed entirely from now until they have their meeting next winter.

The motion of Mr. McMichael then being put was unanimously carried.

Mr. CLARK—In regard to restrictions I bring this matter up now in order to have the association vote upon it. If it is left to the Executive Committee it leaves it rather unfair, because the Convention voted upon it last year. If it had been left to the Executive Committee last year it could have been so left this year. But it seems to me it gives no chance at all to the men that can make nothing but cabinet photographs. It seems to me if restrictions were made, so far as that class of pictures was considered, it would be the proper thing.

Mr. MCMICHAEL—Last year they voted restriction, this year they vote to leave it to the Executive Committee.

The *President*—I think it is right to leave it to the Executive Committee. The experience of our present Executive Committee is such that I took occasion to speak to Mr. McMichael suggesting that this matter ought to be left to that committee. I think they can do it very much better. I know we were restricted in our action last year by two or three motions that were made, and I think we could have made a little better arrangement if there had been no restrictions. We should have sufficient confidence in our Executive Committee—we certainly have a very excellent one this year—to appropriate this money to be used as they may think best.

There is one thing that I dislike very much, that is calling it a "prize." I have no objection to calling it a medal or anything of that kind; but to call it a prize makes it a little too much like a cattle show.

I will now ask Mr. Ely to read the revised and corrected report of the Awarding Committee.

Mr. ELY then read the report. (See previous BULLETIN.)

The *President*—I think that a vote of thanks ought to be offered the very fine Awarding Committee we have had this year. They have taken an exceeding amount of pains. They have been very careful in their work, and I believe that every one, whether they are disappointed or not, will give them all due credit.

Mr. BELLSMITH—I move a vote of thanks to the gentlemen who have served on the Committee of Awards.

I think they have performed their duty most admirably, and I don't think there is a single kicker in the Convention this year.

Motion carried.

Mr. LANDY—I move that the report of the committee be received and the committee be discharged.

Motion carried.

Mr. BELLSMITH—I rise to inquire if the Executive Committee have made the awards for the latest improvement in photographic apparatus. Also the award for the greatest improvement in photographic process.

The *President*—I will say they have not. Since things have been in order down stairs they have been so busy they have not had an opportunity to look them over, and the result will have to be announced through the photographic journal.

I would say we will try and make arrangements so that medals may be distributed to whomsoever they are due.

The *President*—This "Blair Cup" (holding it up) is more particularly a special prize. It was given, as you know, to the Association by T. H. Blair. It was last year awarded to Mr. James Landy for the best special picture. It has been in competition this year. The understanding was that if one person secured it two years in succession it was to be his permanently. It has been awarded again to Mr. Landy, and I take very great pleasure in now presenting him with the cup. (Cup presented amid great applause.)

In response to the cries of "Landy," Mr. Landy said: "I thank you all very much for your good wishes as you express them with your applause. I want to say one thing, and that is that a great deal of credit is deserved by Mr. Seavey for his services. I wouldn't have been able to have done so well without him. I thank you all. I can do no more."

The *President*—If anybody has anything further to offer before this Convention closes, now is his opportunity.

Mr. BOWERSOX—After this Convention closes to-day, will we be allowed to take our exhibits down?

The *President*—It is expected that the exhibits will be left up until to-morrow night, as the people of this city wish to see them, and it has been pretty well advertised. If any gentleman wishes to return home to-night the Executive Committee will see that his pictures are taken down and properly packed and shipped.

Mr. BOWERSOX—I must go back to-night and I would like to take the pictures back with me, if I can.

The *President*—It will be better by all means to leave them. Is there anything further? *Ladies and Gentlemen of the Convention:* I wish to thank you one and all most heartily for the support that I have had in our present Convention. I think we all have reason to feel very grateful that our Convention has passed off so very pleasantly, so harmoniously, that we have had such a beautiful display in our art galleries, that we have had such a very excellent committee to make the awards, and that every one, I think, is satisfied with the awards as given. (Applause.)

Personally, for myself, I wish to thank you very heartily and sincerely. Now if some one will offer a motion for adjournment *sine die*, it will be in order.

Mr. Bowersox—I think there is a little hesitancy on the part of the Convention to adjourn. The members came here with the expectation of seeing Mr. Potter's fair stenographer, and there is a feeling of disappointment at their not having done so.

The *President*—Any gentleman who wishes to see "Mr. Potter's Blonde" can do so by calling on Mr. Carlisle, the Treasurer.

On motion, the Convention then adjourned *sine die*.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

Regular Meeting, September 4, 1888.

The *Vice-President*, J. B. Gardner, in the chair.

The *Secretary* reported he had received for the section the numbers issued during the three summer months of Anthony's Bulletin, Scovill's *Photographic Times*, and J. W. Queen & Co.'s *Science of Photography*. Also a binder for the last named. Beside these, a number of papers, pamphlets and circulars that might be utilized by the section.

The Chairman of the Executive Committee announced that Dr. J. J. Higgins would exhibit an apparatus for producing the flash-light used in photography, and A. D. Fisk, Esq., would occupy the remaining portion of the evening in giving a lantern exhibition. The Chairman also stated that the subject for the October meeting was not fully decided upon, but would be duly announced on the postal notices.

An invitation was extended to all interested in technical photography to attend the informal meetings held on the third Wednesday evening of each month and take part in the discussion of subjects pertaining to the practice of the art. The request was also made that those who desired to read papers or exhibit photographic novelties should apply to the Executive Committee for some specific time, when such papers or novelties could be duly advertised and presented before the section without clashing with any prior arrangements of the committee.

The Chairman introduced Dr. J. J. Higgins, who, after reading a very interesting paper on the subject of "Flash-light Photography," proceeded to explain a mechanical contrivance for the firing of magnesium powder, which could be made available for either instantaneous or time exposures, and possessed the advantage of being not only safe to handle but avoided the heavy cloud of smoke usually attendant upon making flash-light pictures. As this device was exhibited and explained by Mr. George G. Rockwood at the Photographic Convention of 1888, in Minneapolis, and as it has been publicly noted in the reports of that convention, it may be deemed sufficient to thus briefly mention it here.

A vote of thanks was tendered to Dr. Higgins for devising so excellent a means for producing a flash light that could be handled with safety; and for the demonstration of its practicability.

The lantern exhibition was now introduced by Mr. Fisk, who said:

Mr. Chairman and Members of the Section: I feel very grateful to Mr. Gardner for his consideration in issuing upon the postal of invitation simply "Lantern Exhibition." This is exactly what I propose to give to night, and not an illustrated lecture. A large number of the slides are loaned to me by some of my friends, who as amateurs have succeeded most gratifyingly in producing some results not generally obtained until failures are laughed aside. Among these contributors I might mention Mr. G. Poey and Mr. T. B. Mills, of Brooklyn; Mr. Franklin Harper, of New York; and others. The subjects being so varied, I will not give any extended remarks upon them, merely naming the maker and the subject.

The slides consist of athletes jumping, vaulting over bars, and throwing 56-pound weights; bathing, playing ball, racing, etc.; the great Joggen's raft in the East river, scenes at country fairs, etc; Bartholdi Statue by day and night; Dissolving "Blackberries," and a very beautiful colored set, "The Wood Nymphs' Bath." Mr. Fisk, during the evening, exhibited not only the above named, but places of interest in the County of Wicklow, Ireland, also scenes in New York and Connecticut, all of which were remarkable for fine composition, light and shade, and brilliancy.

At the conclusion of the entertainment, a hearty vote of thanks was tendered to Mr. Fisk, and the section, on motion, then adjourned.

At the next regular meeting there will be an exhibition of the German collection sent to the Minneapolis Convention, consisting of the pictures that received the gold and silver medals, and others.

◆

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

A STATED meeting of the society was held Wednesday evening, September 5, 1888, with *Vice-President* JOHN G. BULLOCK in the chair.

The Secretary reported the receipt of a pamphlet from the Royal Meteorological Society of England, containing the first report of the Thunderstorm Committee on Photographs of Lightning Flashes.

The Committee on Membership reported the election of Mr. Daniel R. Hanawalt as an active member.

Mr. William H. Rau, representing the society as one of the Directors of the American Lantern Slide Interchange, reported the organization of that enterprise, eight of the nine societies represented at the conference held in this city in February last having adopted the rules then agreed upon. The several societies have appointed the Directors, and a vote has been taken, resulting in the election of Mr. George Bullock, of Cincinnati, as Manager, with Messrs. F. C. Beach, of New York, and Edmund Stirling, of Philadelphia, as assistants.

The Committee on Presentation Pictures for 1888, whose decision as to one of the pictures for this purpose was deferred from June meeting, reported the selection of "The First Lesson," a flash-light photograph by Mr. John Bartlett.

Mr. Edmund Stirling presented a resolution providing for the appointment of a special committee to have the care of all lantern slides belonging to the society; to make proper effort to add to the collection of slides from choice negatives made by members,—prize exhibition pictures, presentation pictures, etc.,—and to prepare regulations, subject to the approval of the Executive Committee, by which members may have the use of slides for private exhibition. After brief discussion, the resolution was unanimously adopted.

Mr. Miller called attention to a process for altering the tone of a bromide print, which he had noticed in the *Bulletin de la Société Francaise de Photographie* for April, 1887, and showed a print so toned. The bromide print is well washed after the fixing in the ordinary manner. It is then immersed in a ten per cent. solution of bi-chloride of copper, thoroughly washed, exposed to light for a few seconds, and finally re developed with oxalate and washed with acidulated water. The chloride of copper converts the original image into chloride of silver. After the removal of the excess of chloride by washing, the new image in chloride of silver is sensitive, and after exposure to light is thrown down again as metallic silver. The color of this image is a coal black, almost entirely free from the characteristic green tint of bromide prints.

Mr. Bartlett mentioned a curious result obtained while experimenting with bromide paper. A sheet of Eastman's bromide paper was exposed for a fraction of a second to a weak light from a gas flame, then immersed for a few moments in a bath of pure chloride of copper (strength not estimated), and exposed wet under a negative to sunlight for one minute until an image was formed; on drying, the impression was found to be of a greenish tint, and seemed to be perfectly permanent without any fixing in hypo, although exposed to the direct rays of the sun. Mr. Bartlett had not pursued the subject further, but merely called attention to the phenomenon as curious.

Dr. Mitchell stated that recently having occasion to copy an engraving, and finding he had no slow plates on hand, used a piece of transferotype paper on which to make the negative. The film was transferred to glass and then to gelatine skin in the same manner as with a regular "film negative," the whole operation being eminently successful.

Adjourned. ROBERT S. REDFIELD,
Secretary.

◆

ROCHESTER ACADEMY OF SCIENCE—PHOTOGRAPHIC SECTION.

REGULAR MEETING, SEPTEMBER 11TH.

IN the absence of *President* CROUGHTON, Mr. Henry Mathews occupied the chair *pro tem.* After the regular business, the members spent the evening in making lantern slides under the supervision of Mr. C. F. Hovey, who gave the members valuable instruction in that branch of photographic work. Some fine slides were made, which will be shown at our next entertainment. The exposures were made by contact, and developed with hydroquinone. The subject for the next meeting will be photo-micrography by Mr. G. W. Rafter. JAMES STREETER,
Secretary.

◆

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

Q.—A. de C. encloses a small picture, and writes: It is made with the hydroquinone developer, and I would like to get your candid opinion of it. The negative is better than the proof, for the taste here does not run in the direction of deep prints, and I have had some trouble these last days in toning, probably some fault in my silver bath. In these moist days the gelatine gets decomposed, and produces a partly foggy appearance.

A.—The print appears to us to be one from an under-developed negative. Hydroquinone works slower than pyrogallol and needs a little longer development. We also think that your toning bath is too alkaline; this would produce just the appearance shown on the print sent.

Q.—A. B. C. writes: Can you give me any information in regard to a process of printing on porcelain glass so it will stand the heat of a glass pot when its contents are in a state of fusion. Some glass workers have shown me paper weights with portraits in them, and they have seen them made, and the picture is thrust into the glass pot and rolled around until sufficient is gathered on to make the proper size. Platinum will certainly stand the heat, but how can I use it in printing on porcelain so it will not burn off?

A.—You will have to use a collodion plate, either wet or collodion emulsion, and tone with platinum chloride. The picture should be burnt into a thin piece of glass first, and can then be used in a glass pot to make paper weights, etc.

Q.—H. C. N. writes: Can you give me the following information through the next BULLETIN? 1. The "British Journal Almanac" for 1886, page 253, gives a method of making hydroquinone by oxidizing aniline with bichromate of potash, and the "Encyclopedia Britannica," Vol. II, page 48, says that the dye known as "mauve" is made by oxidizing aniline with bichromate. What is the difference in the two operations? 2. How is hydroquinone made commercially?

A.—It is perfectly true that bichromate of potassium is used to make both the dye "mauve" and also hydroquinone. In the former case, aniline is oxidized with a strong solution, and in the latter case the oxidization is conducted to obtain quinone by using a weaker mixture. The quinone thus formed is treated with potassium sulphite, and the hydroquinone produced is extracted with ether. Some such process as this is used commercially.

Q.—C. F. writes: Will you kindly give me, in your next issue, a formula for toning which will insure a soft brown tone, also one for a black tone. I would also like to know if there is a work on "Lighting and Posing." If so, where procured.

A.—To obtain a brown tone, immerse the prints in a bath containing a few drops of acetic acid in a pint of water. Now tone in a bath of gold and sodium acetate, with enough soda bicarbonate to make it slightly alkaline. For a black tone, immerse in a bath of ammonia, a few drops to the pint of water, and then tone in a gold solution without acetate, but alkaline with bicarbonate. In the latter case the printing should be deep, the shadows entirely covered before toning. We know of no book that treats of lighting and posing specially; read Burnett's Art Essays.

Q.—J. L. T. writes: Will you kindly tell me, through that most valuable little journal, the BULLETIN, what is the matter when my prints are covered with bubbles? They are all right otherwise. The bubbles are "in" not "on" the prints, and get there when the toning is just about finished or when fixing. Would washing too much or too forcibly have that effect?

A.—The trouble is probably due to the warm weather, and a rapid change from a very warm to a cooler solution or the reverse will produce the same result. Try a salt bath; a handfull in a gallon of water, after toning and before fixing. This will probably help you.

Q.—B. L. N. writes: 1. How would a negative be effected while receiving development if the dark room were not perfectly light-tight? 2. Which developer would you recommend for good work—ferrous-oxalate or pyro and ammonia; and give reasons or difference relative to each. 3. I am using Carbutt's dry plates for landscapes, etc., and develop with ferrous-oxalate. Details are plain but the negative is weak and possesses a thin appearance, and there does not seem to be sufficient contrasts between the lights and shades. Is it due to over-exposure, insufficient development, or incorrect adjustment of the solutions in mixing the developer, and how should the plate appear to indicate when sufficient development has arrived? 4. Give formula of chloride of gold solution or bath for toning prepared sensitized albumen paper, and how should I judge the amount of gold required to tone a desired amount of prints (size 5 x 8), and is it necessary to wash prints after toning, before fixing? 5. I have been using plates, Sensitometer No. 16, but received some No. 20. Should I make an allowance in exposure and how to be determined?

A.—Negative would be foggy. Pyrogallol and soda, or the new hydroquinone developer, are better than oxalate; you can get more detail and softer negatives with them. Probably due to insufficient development. When development complete, high lights show on the back of plate. It is best to follow the directions that are sent with the paper. Yes, make an allowance.

Q.—J. L. I. writes: Will you please inform me through the Bulletin if there is in the United States a patent on stamp photos, either perforated or not. If there is, what does the patentee claim as his? The production, or the method of producing, or both?

A.—There is a patent that covers these pictures; write to H. A. Hyatt, 8th and Locust streets, St. Louis; we believe he owns these patents.

Q.—M. & F. writes: Will you be kind enough to answer through the Bulletin the cause of the following trouble: Our pictures are first put in acetic acid water for about twenty minutes, and then washed until every trace of silver is removed, but in toning, the silver comes out so much that the bath becomes milky, and we are obliged to make a new bath for every 100 cabinet-prints. Silver, one and a half minutes; fume, twenty minutes; silver bath, fifty strong. Use Hunter's toning bath as given in the Bulletin November 28, 1887. Keep the silver bath neutral. If you can give us any information, or wherein the trouble lies, you will greatly oblige a subscriber.

A.—The trouble is probably due to impurities in the water. Use filtered rain water if you can get it; the waters in your section are noted for their impurities.

Q.—W. B. C. writes: Will you please answer through the columns of your valuable Bulletin whether there ever has been any chemical used in the development of negatives by the name of Uva Ursi? If so, can you give me any light on the subject how it is used and made up?

A.—We have not heard of the use of Uva Ursi in photography.

Q.—D. B. asked in last Bulletin for a formula for black tones; as we were going to press we could not find the one we wished to give and therefore print it now.

SILVER BATH.

Nitrate silver	1 ounce.
Water	10 ounces.

This bath must not react acid, filter before using, and stir after sensitizing each sheet. Float the paper from two to three minutes.

TONING BATH.—*Solution No. 1.*

Double fused acetate of soda	90 grains.
Crystalized	90 "
Pulverized borax	48 "
Water	24 ounces.

Solution No. 2.

Chloride of gold and sodium	12 grains.
Water	1½ ounces.

Mix the solutions about one hour before using, and filter.

FIXING BATH.

Hypo-sulphite of soda	1 ounce.
Water	10 ounces.

All the baths must have a uniform temperature. The sensitized sheets and washed prints must not be dried too quickly. The prints should be moist when mounted.

* * *

Views Caught with the Drop Shutter.

The firm of Decker & Wilber is dissolved by mutual consent. All accounts due the late firm must be paid to E. Decker, who assumes all liabilities. E. Decker will continue the business at 143 Euclid avenue, and hopes for the favors of the public in as generous a manner as for the past thirty years.—*Cleveland Plain Dealer.*

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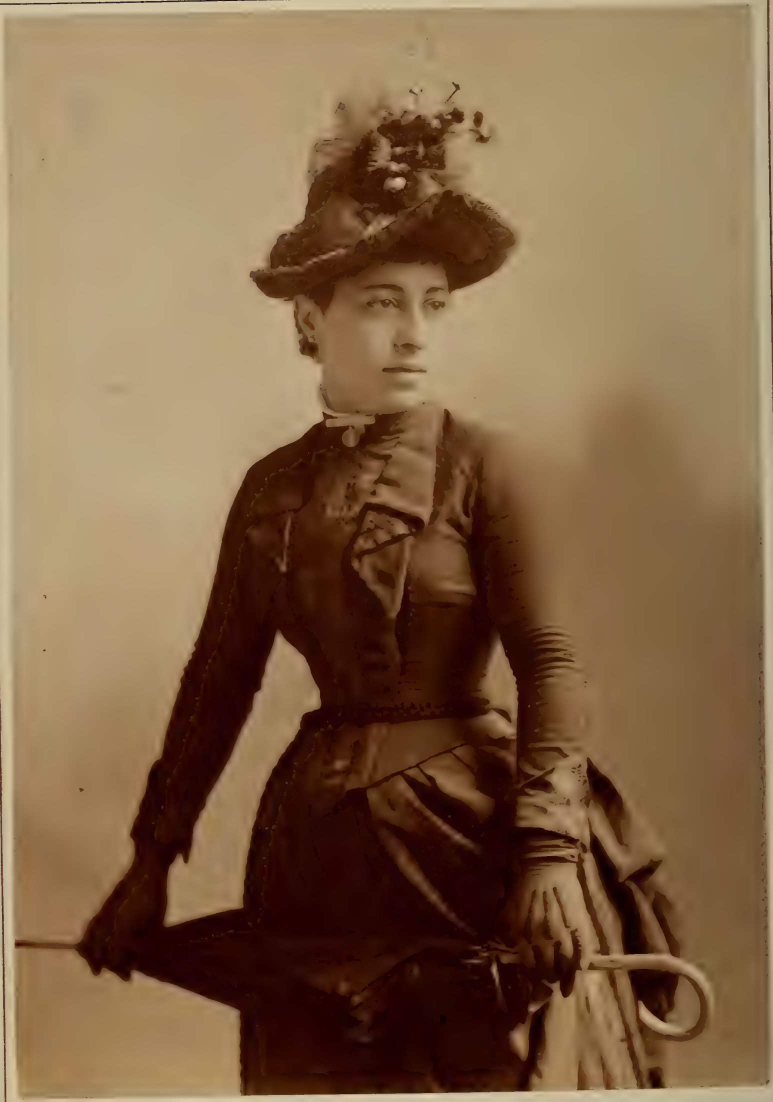

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BY

Anderson

ANTHONY'S

Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

OCTOBER 13, 1888. Vol. XIX.—No. 19.

THE PRACTICE OF PHOTOGRAPHY NEAR THE FREEZING POINT OF WATER.

As soon as the first chilly weather of the Fall sets in, we are constantly in receipt of letters asking all kinds of questions about difficulties that are mainly due to the effects of low temperature upon negatives, paper and chemicals in solution. One correspondent will write: "I made up a developer only a week ago, and to-day I find the bottle half full of crystals; will it make any difference in the results if I use the solution as it is, or what shall I do to make it all right?" Another writes: "I have got some silver stains on my negatives, that appear to come from the printing paper; can you tell me how to prevent this?" Yet another encloses a mottled print, and writes: "What is the matter with this printing paper? I have used it with success up to the present time, and now I am troubled with these ugly markings."

Every one of the troubles we have mentioned is probably due to a rapid change in the weather. A great many of the developers now in use are strong solutions of carbonate of sodium, or carbonate of potassium, or both, together with sulphite of sodium. If these solutions are made in warm weather, they will not deposit any of the salts which they contain. But, it must not be forgotten, that heat has a great influence upon the solubility of chemical substances, and that, as a rule, the warmer the solution the more salts it will hold. Therefore, if we have a fluid holding sodium or potassium carbonates in solution, at, say, sixty degrees Fahrenheit, it is by no means certain that these carbonates will still remain in solution if we reduce the temperature to forty degrees Fahrenheit. In fact, a solution of carbonate of sodium holds about sixty per cent. of its weight of crystallized salt at sixty degrees Fahrenheit, and only about thirty per cent. at forty degrees. It therefore follows that such a solution will deposit half its crystals if its temperature falls twenty degrees. Now, since the carbonate of sodium is put into it to make it act with the pyrogallol as a developer, if the solution has crystallized it has lost its strength. In such a case the bottle should be placed in a vessel of cool water (say in a tin pail), and the whole then carefully heated over a fire until the crystals are again in solution. The best way is not to let the solutions get chilled at all, and further trouble and doubts as to their usefulness will not arise.

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What has been said about carbonate of sodium, is also true in regard to sulphite of sodium.

With carbonate of potassium we have a different state of affairs, as considerable change of temperature does not cause a deposition of the salt, and furthermore, a solution of the mixed carbonates (potassium and sodium), does not deposit as readily as sodium carbonate alone.

In the second case, mentioned above, the stains on the negative, we have a difficulty that is a little more difficult to recognize, unless one has passed through the same experience. These stains get upon the negative from the printing paper by way of the moisture that condenses on a cold negative when brought into a warm room. Negatives are often stored in a closet or room removed from and much cooler than the printing room. The printing frame is ready, and the negative is brought into the room to be placed in the frame; from some cause or other it has to stand a few moments, and, being cold, the moisture from the air condenses on it (like the outside of an ice-pitcher), and in this condition it goes into the printing frame, generally unobserved, the inevitable result being a solution of the silver nitrate with which the paper is sensitized, and a transfer of the same to the gelatine film, ruining the latter. Great care should, therefore, be taken that cold negatives are not brought into warm printing rooms to be placed in the frames. Furthermore, after having placed a negative and paper out of doors to print, do not bring the frame into a warm room for more than a moment, otherwise condensation of moisture on the negative will take place in this case also.

The trouble with mottled paper is due to the fact that the albumen surface will not accommodate itself to rapid changes of temperature. A change from a warm toning bath to a cold fixing solution, or from a cool toning bath to a warmer fixing solution, will always produce some such results.

From what we have said, it is evident that too much care cannot be taken to keep the various departments of a photographic laboratory at a constant and moderate temperature. In addition to the difficulties mentioned above, the various baths and developers will not work as well nor as uniformly at forty degrees as they will at sixty degrees Fahrenheit. Good prints can be made with less silver in the bath in warm than in cold weather. It is better to keep the various rooms, both developing and printing, at about seventy degrees Fahrenheit, and to take special care that they do not fall below sixty degrees during the night. If this is done, greater success in developing, better prints and more satisfactory results, generally, will be more than a reward for any extra care taken to secure more even temperatures for photographic work.

If the above lines serve to call the attention of our fellow-workers to some coming dangers, we shall be fully rewarded for the time spent in penning them.

EDITORIAL NOTES.

The wonderful phenomena of electricity in its various ramifications, are leading scientists to understand better the character of luminous vibrations. From experiments recently made by Herz, the electrician, there appears to be some very close connection between electro-magnetic vibrations and the vibrations of rays of light. The time of vibration of electro-magnetic impulses and that of light impulses has been found to be the same. There have also been discovered certain phenomena of interference in electro-magnetic inpulses that correspond with the interference of light-waves. It appears that light is possibly an electro-magnetic phenomena. The development of these researches will prove highly interesting.

We have been often asked to explain the new preservative of pyrogallol called "metabisulphite of potash." Chemically, it is potassium disulphite, and has the formula $K_2S_2O_5$ and is derived from bisulphite of potassium by substracting one molecule of water from two molecules of the salt, thus:

$$2KHSO_3 - H_2O = K_2S_2O_5.$$

It is made by passing sulphurous oxide gas into a hot saturated solution of potassium carbonate. It takes the form of crystalline needles, not very soluble in water. It gradually decomposes, giving off sulphurous oxide, which preserves pyrogallol in solution.

Mr. A. E. Caddy, in a paper read before the Photographic Society of India, recommends the use of sugar as a preliminary bath for bromide prints before developing with ferrous oxalate. He uses a tablespoonful and a half in a large tray of water, that will hold a 15-inch print, and says that contrast is increased and the tone improved by this proceeding, while several prints may be soaked at the same time. The same gentleman has also been using Mr. Carey-Lea's reducer with much success on gelatine negatives; the formula is:

Potassium bichromate	10 grains —	2.3 grams.
Hydrochloric acid	10 minims —	2.3 c.c.
Water	1 ounce —	100.0 c.c.

The Amateur Photographic Society of Baltimore offers to its members prizes (gold medals and badges) of equal value and merit, for the following subjects:

First.—A collection of twelve exterior time prints.

Second.—A collection of twelve instantaneous shutter prints.

Third.—A collection of six lantern slides.

Fourth.—A collection of twelve miscellaneous prints.

The fourth prize is only open for competition to lady members, and all work must be handed in before January 31, 1889. We think this is a good way to stimulate amateur photographic work, a few prizes and good ones are worth a bushel of diplomas.

Dr. Edward L. Wilson is at work on the volume of *Mosaics* for 1889. He has already called for contributions to this ever-welcome little volume, and we advise all who have hints, dodges, devices and practical ideas, to send them to him at an early date.

We have recently seen a number of views along the line of the Canadian Pacific Railroad, taken by R. W. Anderson, of Toronto, that are particularly good. Those along the Selkirk Range were wild and picturesque, with remarkably clear definition and brilliant effects. Those interested in this section should see these pictures.

To Mr. B. L. H. DABBS, of Pittsburgh, we are indebted for several excellent cabinet prints of children for our collection. The little girl leaning upon a chair is very happily caught, and a couple of babies in a large arm chair, with faces beaming with smiles, is the best picture of the kind we have ever seen. It is the most perfect photograph of happy childlike faces in babyhood that could well be conceived.

Colonel V. M. WILCOX, of the firm of our publishers, while on his recent vacation met his old command at Danville, Penn., being the first reunion of the 132d Regiment of Pennsylvania Volunteers. This was the first meeting of the Colonel and many of his men after the terrible battle at Antietam, more than a quarter of a century ago, and was the anniversary of the battle, September 17, 1862. As was to be expected the reunion was a grand success. The Grand Army organizations of the locality—a portion of the National Guard of Pennsylvania, the Grand Army of the Republic, and other veterans of the Army—gave their comrades a royal welcome. In the evening a Camp Fire was held at the Opera House, which was filled to overflowing. An address was made by Colonel Wilcox, giving a review of the battle of Antietam, and other speeches were made by the comrades and the many incidents related which occured during the campaign. After the meeting, Colonel Wilcox and his son, Dr. R. W. Wilcox, went to Antietam and obtained some photographs of the old battle field, and the Roulette house and barn where his regiment suffered such severe losses. We must congratulate Colonel Wilcox upon his being able again to join the remnant of his regiment under such pleasant auspices.

ENGLISH NOTES.

[*From our Special Correspondent.*]

THE INTERNATIONAL ANNUAL still continues to excite interest and admiration in England, and every copy is snapped up as quickly as it arrives. Certainly nothing so good and so cheap has ever before appeared in the literature of photography.

A large society to which I belong has recently held an interesting competition in development. It was announced that all members who sent in their names by a given date could, during the following week, obtain from the secretary a parcel of three-quarter plates which had received various exposures in contact with a transparency. Each member had to deal with his three plates as best he might, and the prize was to be awarded to the member who produced the best three negatives. Of course, each parcel of three plates had received an identical exposure with every other parcel, so that all the competing members were placed on an equal footing; and the conditions forbade all help or communication with one another. Perhaps it may be of interest to detail how I dealt with my own three negatives. I put them all at once into a large dish, and poured upon them a developer strong in pyro, with but little bromide, and still less ammonia. After the lapse of five minutes one plate began to show a faint grayness upon its surface (it turned out afterwards to have been immensely over-exposed). I instantly removed it from the dish, rinsed it well, and placed it to soak in a three per cent. solution of ammonium bromide.

Cautiously adding ammonia to the developer containing the remaining two plates, another of them began to show signs of the image (this was the correctly exposed plate), but the third remained wholly unaltered. This third plate I placed for five minutes in a one per cent. solution of ammonia, and then returned it to the large dish; into which I also returned the negative that had been soaking in ammonium bromide.

After fifteen minutes the correctly-exposed plate was removed from the dish as being fully developed; and it was followed five minutes later by the under-exposed plate; while the last to be withdrawn was the over-exposed one, which gave the most trouble, and required altogether twenty-five minutes.

The result was three very fair negatives, each capable of yielding a decent print. This plan of developing several negatives in one dish, and then treating each separately according to its requirements, has certainly some good points about it. Altogether the competition was a most interesting one, and I recommend the plan to other societies.

The new "print-out" platinotype paper which is being manufactured in Germany by Drs. Adolf Hesekiel and Jacoby, of Berlin, is having a large sale in England. The method is simplicity itself, as Captain Pizzighelli says in his splendid article in the "International Annual:" "Here there is no development; the picture becomes visible during printing, and its progress can be observed and guarded the same as in silver printing. After printing it is simply washed in acidified and afterwards in ordinary water." As I have just been testing the process to the extent of some four or five dozen prints, I can affirm that good results can be obtained with a minimum of effort and trouble. The secret of the method consists in putting a developer on the paper in addition to the salts of iron and platinum, which are affected by light.

Our amateurs are now slowly taking up their winter quarters; withdrawing from the seaside and the moor, the loch and the fiord. Truly this has been a poor season for the camera carrier—fine days have been few and far between—and the amount of sunshine, as shown by the automatic recorders now in use at the meteorological stations, has so far been almost exactly one-half of that of 1887.

Printing and framing are going on vigorously in view of the great event of the photographic year—the opening of the annual exhibition of the Photographic Society of Great Britain—which will take place in London on Saturday, September 29th. The exhibition will remain open for six weeks, and it is an open secret that no medals or prizes will be awarded. Well, we shall see what we shall see, but in my humble opinion the abandonment of so powerful an incentive to good work is to be deprecated.

During last month (August) I spent three glorious weeks in North Wales. Just what fine weather there has been this year was concentrated into those three weeks; the torrents were filled to overflowing; the grass was emerald-green; and the bracken ferns rose six feet high or more. I took matters pretty easy, only exposing one hundred and twenty white plates, and about three dozen 5 x 4. I tried to develop a few plates "on the spot," but soon gave this up, and have had some enjoyable evenings at the work since I returned. How photographing a spot seems to impress it on one's memory! Among the most valuable lessons which photography teaches are the desire to look for the beautiful and the power to recognize it in nature.

In instantaneous work at the seaside I simply carried my white plate camera in my arms, held closely against my chest, covered with black focussing cloth, and focussed for a distance of five yards.

An assistant—I am plentifully provided with "olive branches," so have no lack of help—strolled on my right hand, and another on my left. When the "quarry" seemed worth a shot—perhaps it was a party on donkey-back pursued by the inevitable boy, perhaps a "highly-kilted" group of girls paddling—the word "one" was given, at which the right-hand assistant pulled out the shutter; "two," my left-hand helper squeezed the ball (which he carried in his hand) of the pneumatic shutter. And so we went merrily along, practically escaping observation. The pictures, taken in this way, have developed quite successfully, showing no traces of any motion of the camera.

In the hay-field I pursued similar tactics, and with a fair share of success. The little Welshmen were working desperately hard to save their hay during the few fine days, so that my appeals to be allowed to pose a group were met with cries of "Impossip," which was as near as the farmer could come to our "impossible."

While I write the British Association is holding its fifty-eighth annual meeting at the historic town of Bath. My friend, Mr. O. W. Jeffs, has read a paper on the applicability of photography as a recorder of geological facts; he proposes to photograph all our railway cuttings, quarries, etc., etc., but states that each photograph should be accompanied by a section drawn by hand, and colored and lettered to express the geology there exemplified. Truly, photography is becoming an integral part of every art and of every science; and in return it will, doubtless, receive much benefit from the clever brains and cunning hands of the men who enlist it in their service; at least such is the confident hope of TALBOT ARCHER.

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

Transferring Gelatine Films.—Albert's New Isochromatic Collodion-Emulsion.—Albert's New Etching Process.—Another Process for Printing Half-tones on Blocks.—Concentrated Soda Developer.

THERE is a process to strip (transfer) gelatine negatives with fluoric acid, giving magnificient results, but it is too troublesome, by it being necessary to prepare a gelatine film for transfer.

My son has lately discovered that negatives to a size of 13 x 18 cm. can be transferred quite well without gelatine. The proceeding is as follows:

The negative is placed on the leveling stand and flowed with collodion (3 per cent is best), after settling it is laid in water sufficiently long to be evenly covered by it, it is then put into the diluted fluoric acid (three parts fluoric acid and thirty parts of water) until the corners begin to loosen, and then it is stripped by means of a piece of paper squeegeed upon the same. A well-cleaned glass plate is then rubbed with talc, flowed with 3 per cent. collodion, as mentioned above, and washed until all the greasy stripes disappear. Upon this plate the film is squeegeed and dried. The drying is much quicker than by application of gelatine; the edges are then cut with a sharp knife and the film is stripped.

In case such a negative should have a tendency to curl, it is bathed for a few minutes in a mixture of eighty parts of alcohol (90 per cent.), and twenty parts glycerine and dried between filtering paper. The film remains completely smooth and flexible.

Negatives stripped in this manner serve for Lichtdruck, carbon-prints, photo-lithography, etc.

The latest news in market is the isochromatic collodion emulsion of Dr. Albert. It was announced already in May, and the inventor asserted that his collodion emulsion was as sensitive as gelatine emulsion and isochromatic without yellow screen.

That of course would be a very significant discovery, and I was therefore eager to see the preparation. It is now in market in two separate solutions—a bromide collodion emulsion and a color solution—differing according to requirement for portraits or reproductions. The emulsion, as such, is not color sensitive, but becomes so by addition of a color solution. This is prepared according to the requirements for the day.

This last remark of the inventor proves that the colored emulsion will keep only a short time; and he prescribes further, that it must be exposed while fresh, that is, as long as it is *wet*. In a dry state the plates are less sensitive than while wet. If this is the case, the Albertype collodion emulsion would remain restrained to wet plates, that is, to gallery work. To this may be added, that collodion dry plates, as is well known, will lose their light impression very quickly, requiring quick development after exposure, while exposed gelatine plates may be kept for some time before developing them.

I have tested the Albertype emulsion. Uncolored, its sensitiveness is not very great, about ten times less than the sensitiveness of a gelatine plate. But the colored emulsion, on the contrary, has double the sensitiveness of gelatine plates. Completely isochromatic or orthochromatic, they are not. I made a color table, with nine colors, which, in proportion of light, ran as follows: 1, rose; 2, pale yellow; 3, pale green; 4, yellow chromate of lead; 5, peroxide of lead (orange); 6, dark green; 7, ultra marine blue; 8, cobalt blue; 9, dark red; but with Albert's isochromatic collodion the colors acted in the following order:

1, 3, 2, 4, 7, 8, 6, 5, 9.

The plates have to be treated very carefully and the slightest uncleanness will cause spots.

The inventor says nothing about the manner of producing his collodion, and of the color he remarks only that it contains picric acid, which is intended to reduce the action of the ultra violet rays. I experimented in this direction and have found that Albertype collodion is more sensitive for ultra violet, after coloration, than previously. Further tests are under way.

Mr. Albert has also recently published a "process for the execution of photographic etchings by application of a resinous chromo gelatine" (Patented in the German Empire, December 28, 1887, D. R. P. No. 43,098). He says: Photographic etchings are divided into two classes, namely, the intaglio etchings for copper prints, and the relief etchings for book printing. For the latter kind of etching, resinous gelatine might find its principal application.

The resinous bodies have for a long time been used in photography for etching purposes on account of their resisting power against the influence of acids, particularly asphaltum, which even has some photographic properties—by losing its capability to dissolve in turpentine after being exposed. The results obtained by this method are very complete, but one evil is the very low photographic sensitiveness of the asphaltum, requiring even in the direct sunlight an hour to be exposed until insoluble; in diffused daylight it cannot be applied at all, and to use it to advantage in business requires a pretty costly outfit for electric lighting. A further evil in the asphaltum process is the requirement of reversed negatives, being always attended with much waste of time in the production of the negatives. It is now said that these defects can be completely removed, by making use of the properties of chrome gelatine, to become insoluble in warm water by exposure to light and by adding asphaltum powder or any other resinous body finely distributed, to the gelatine in place of the pigments generally used for the production of the well-known carbon prints, giving the gelatine by subsequent melting of the asphaltum or resin the necessary properties required for etching.

The manipulations by application of the resinous gelatine are the same as with the pigment paper, that is, sensitizing in the chrome bath, drying at 20 degrees C., exposure under a line or autotype negative, transfer upon the metal to be etched, development in warm water at 50 degrees C.

If the gelatine has been exposed correctly it will dissolve completely at those parts corresponding to the high lights of the negative, an pure metal appears, while on the other parts the gelatine with the resinous bodies will adhere. After drying of the gelatine relief, so obtained, the resin is melted by heating over a gas or alcohol flame, and the power of resistance is thus created necessary to the etching in acids.

The advantages of this invention, according to the inventor, consist, above all, in the great light sensitiveness of the resin gelatine, the time of exposure in the sun being up to three minutes, therefore twenty times less than with asphaltum, in diffused daylight to forty-five minutes; further, that in consequence of the transfer upon the metal, the production of a reversed negative becomes unnecessary. This transfer upon the metal gives the resin gelatine process another advantage exceeding all other processes, namely, that of the greatest possible sharpness and delicacy of the lines, the side of the gelatine having been in direct contact with the negative, being also nearest to the metal, excluding a widening of the lines.

The field of photo-mechanical printing is also cultivated by others. There has been recently a process patented, belonging to the "Societé Anonyme des Arts," in Brussels, a process by which any pictures can be combined with a corresponding ground-tone in such a manner, that the cliché's produced by zincography imitate woodcuts as well as copper and steel engravings.

The process is, by means of a suitable projection apparatus, to throw the picture of the object to be reproduced upon a paper or rubber sheet prepared previously, to photograph the picture produced in this way, and then to transfer the same upon zinc or copper by any of the known processes.

For the execution of this process, a sheet of white paper, or a rubber sheet, previously whitened, printed with the required line tone, is put on a stretcher, and the latter is placed in position at a corresponding angle. Upon this sheet the photographic picture is thrown by means of a projection-apparatus, whereby the same appears upon the line tone, the same as a woodcut or steel engraving.

Finally, a new developing formula of Max Wolf, which is to take the place of the potash developer.

The potassium developer is well known; besides its qualities as a powerful developer it is of great advantage to travelers, because it can be produced in concentrated form.

But it has the disadvantage, that on account of the potassium, a coloring of the plate will quickly take place and that the frilling can hardly be avoided, if an alum bath is not applied immediately after development. For these reasons Mr. Wolf produced some time ago for his own use another developer, which is just as concentrated as the potassium developer, which gives clear negatives and causes no frilling.

Two stock solutions are made:

Sulphite of soda	30 grams.
Conc. sulphuric acid	5 drops.
Pyrogallic acid	10 grams.
Water	100 parts.

Whereby it is essential that the several solutions should be made in correct rotation, pyro oxidyzing at once, if put into the water before the sulphite of soda. Filtering is not admitted.

Cryst soda carbonate	75 grams.
Sulphite of soda	40 "
Water	200 parts.

This solution is filtered.

To develop, take 100 parts of water, 3 c.c. A and 4 c.c. B, but if necessary, 1-3 pyro more or 1 c.c. less may be taken as mentioned in formula. Alum bath after developing is not necessary, but it will prevent frilling and yellow tint. When placed into the fixing solution, the lights will become darker. Bromide of potassium acts the same as in the potassium developer. The solution A can be used for the potassium developer as well as for the soda developer.

Berlin, September, 1888.

[*From Photograpishe Mittheilungen.*]

IMAGES THROUGH FINE OPENINGS.

BY A. MIETHE.

If the light issuing from a luminous point is absorbed by an opaque screen, in which is a circular opening, this latter will cut from the total radiating mass a bunch of rays of cylindrical appearance at a great distance from the luminous point.

Upon a white surface, parallel with the green, will therefore form a generally elliptic luminous disk, representing the cut of this surface with the cylinder. If, on the other side of the small opening, several luminous points are in one plane, then there will be just as many orbicular images upon the white surface, whose distance is in the same proportion as the distance of the luminous points to each other. A light surface being now considered as an aggregate of luminous points, it can be considered to conform thereto, only that its image is not composed of points, but of disks of visible diameters overlapping; it will therefore appear unsharp, as we are accustomed to express ourselves. The principle of the image was already known to the ancients. Their *gnomon** oftentimes contained in its style a small opening, through which a sun-picture was depicted upon the surrounding horizontal plane, whose position gave the more exact time and obliquity of the ecliptic than the unsharp shadow of the style itself.

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* Ancient sun-dial.

Such a picture can be caught up at any distance from the circular opening, and, presuming a simple straight line transmission of the light, the image will show so much more detail the larger the distance from the opening, and the smaller the latter is itself. In the former case the distance of the several disks becoming larger and the smaller parts becoming visible; in the latter case the disk become smaller, lessening the unsharpness. In this way a picture of any desired fineness and size could be obtained, and if a sensitive plate is put in place of the screen a picture can be obtained, with sufficiently long exposure, whose sharpness and dimensions can easily be controlled.

Photographer's pictures have indeed been made in this manner, but their execution, relative to sharpness, depends solely upon chance and lengthy experiments. Although I am not of the opinion that "photography, without objectives," as this experiment has emphatically been called, has any kind of future, I have resolved to investigate the subject pretty closely, it being certainly interesting to know what results may be obtained under favorable circumstances.

It is known to all practical photographers, that as far as sharpness is concerned, it is of advantage to use the central stop to a certain degree only. If one goes beyond a certain small diaphragm (about $\frac{1}{40}$ — $\frac{1}{50}$ focal distance), one obtains, besides a certain flatness of the picture, unsharp, velvet-like outlines. This unsharpness is due to the bending of the light on the edge of the small diaphragm. If a small opening is applied in place of the sharply diaphragmed objective, one will easily comprehend that a point has to be reached, when the sharpness gained by reduction of the opening will be suspended by the action of the bending. There is, therefore, a suitable size opening for every distance of the screen, at which the picture will obtain the greatest sharpness.

Before we commence to calculate this most favorable case, we have first to define what is to be understood by "unsharpness" for our purpose. We call unsharpness the radius of that circle, which upon the screen represents the picture of a luminous point. The picture of a straight line of 0.82 mm. unsharpness, would represent, for instance, a line 1.64 mm. wide.

It is clear, that in such a picture, produced by a fine opening, the unsharpness is composed of two quantities. The diameter of the opening forms the next element of the picture, that is, it will give mosaic-shaped forms from the circular disks. The unsharpness, originating from this, is equal to the radius of the fine opening. Then the bending will add to the enlargement of these picture elements. If, therefore, the bending would determine the picture of a point as a disk of diameter, p, and the diameter of the diaphragm be equal to q, the whole unsharpness would be:

$$\mu = \frac{p + q}{2}$$

In theoretical optics it is now shown that the linear value of the bending depends only on the diameter of the diaphragm and the distance of the screen, and Fraunhofer and Schwerett have developed formulæ, from which, for each opening, the size of the bending disks produced by the same can be calculated.

I abstain here from mentioning the mathematical expressions; it may be sufficient to give a table, which was compiled by me, and gives the radii of the bending disks in fractions of the opening and the distance of the screen. The heads of the columns contain the distances of the diaphragm from the screen in millimeters; in the first vertical column one finds under φ the size of the opening diameter in millimeters.

φ	10	20	30	50	100	200	300	400
0.6	0.011	0.022	0.034	0.056	0.112	0.224	0.336	0.448
0.5	0.013	0.027	0.040	0.067	0.134	0.269	0.402	0.536
0.4	0.017	0.034	0.051	0.085	0.169	0.337	0.507	0.676
0.3	0.022	0.045	0.068	0.112	0.225	0.449	0.675	0.900
0.2	0.034	0.067	0.101	0.167	0.337	0.674	1.011	1.348
0.1	0.067	0.135	0.202	0.337	0.674	1.348	2.022	2.696
0.09	0.075	0.150	0.225	0.375	0.750	1.500	2.250	3.000
0.07	0.096	0.192	0.288	0.480	0.960	1.920	2.880	3.840
0.05	0.113	0.227	0.340	0.567	1.153	2.270	3.405	4.540
0.04	0.117	0.234	0.350	0.584	1.168	2.336	3.504	4.672
0.03	0.122	0.245	0.368	0.612	1.225	2.450	3.675	4.900
0.02	0.134	0.267	0.401	0.668	1.337	2.674	4.011	5.348
0.01	0.167	0.335	0.503	0.837	1.675	3.350	5.025	6.700

If for instance the size of the bending radius for an opening of 0.3 and a length of 100 mm. is wanted, one will find 0.225 mm.; for the opening 0.25 and the distance 150 one obtains by linear interpolation 0.421 mm., etc.

To find now the unsharpness of the picture produced with a certain opening and definite length, nothing remains to be done, but to add each time to the numbers of the adjoined table the radius of the respective openings. One so obtains for the unsharpness, the following table, which I produce here that I may add some remarks.

φ	10	20	30	50	100	200	300	400
0.6	0.311	0.322	0.334	0.356	0.412	0.524	0.636	0.748
0.5	0.263	0.277	0.290	0.317	0.385	0.519	0.652	0.786
0.4	0.217	0.234	0.251	0.285	0.369	0.537	0.707	0.876
0.3	0.172	0.195	0.218	0.262	0.375	0.599	0.825	1.050
0.2	0.140	0.177	0.201	0.267	0.437	0.774	1.111	1.448
0.1	0.122	0.140	0.252	0.387	0.724	1.398	2.072	2.746
0.09	0.120	0.195	0.270	0.420	0.795	1.545	2.295	3.045
0.07	0.131	0.227	0.323	0.515	0.995	1.955	2.915	3.875
0.05	0.138	0.252	0.365	0.592	1.160	2.295	3.430	4.565
0.04	0.138	0.254	0.370	0.604	1.188	2.356	3.524	4.692
0.03	0.138	0.270	0.383	0.627	1.240	2.466	3.680	4.915
0.02	0.144	0.277	0.411	0.678	1.347	2.684	4.021	5.358
0.01	0.172	0.340	0.508	0.842	1.680	3.355	5.030	6.706

One will observe that the unsharpness derived from a certain length will vary with the width of the opening, so that it will become a minimum for a certain size opening. The table shows therefore—and that is very important—how to choose at a given length the most advantageous opening or *vice versa*. We see for instance that the best opening diameter 0.2—0.3 mm. will be sufficient for a length of 50 mm.; if the opening was reduced to $\frac{1}{10}$, one would obtain an unsharpness about three times as large. Further, as the image of an object will form only when its size upon the screen is at least equal to double the unsharpness, one can easily find, that for a length of 10, 20, 30, 50, 100, 200, 300, 400 mm.

the smallest visible object must have an angular size of 41°, 3; 24°; 21°, 5; 17°, 75; 13°; 7°, 30; 7°, 1; 6°, 5. A full grown man will therefore give an image length of 10 mm. at 220 metres, and 400 mm. at 1,250 metres distance, provided, that the most favorable opening is selected.

To facilitate practical experiments I have calculated a table of exposures, putting the time, which is used, to obtain a well exposed picture at 100 mm. length and 0.1 opening = 1 :

φ	10	20	30	50	100	200	300	400
0.6	0.0003	0.0012	0.0027	0.007	0.0277	0.12	0.27	0.48
0.5	0.0004	0.0016	0.0036	0.01	0.04	0.16	0.36	0.64
0.4	0.0006	0.0024	0.0054	0.016	0.063	0.24	0.54	0.96
0.3	0.001	0.0044	0.01	0.028	0.111	0.44	0.99	1.76
0.2	0.002	0.01	0.022	0.063	0.25	1.0	2.25	4.0
0.1	0.01	0.04	0.1	0.25	1.0	4.0	9 0	16.0
0.09	0.012	0.049	0.107	0.31	1.235	4.92	10.7	20.0
0.07	0.02	0.08	0.18	0.5	2.0	8.0	18.0	32.0
0.05	0.04	0.16	0.36	1.0	4.0	16.0	36.0	64.0
0.04	0.063	0.25	0.56	1.56	6.25	25.0	56.25	100.0
0.03	0.111	0.44	1.0	2.78	11.11	44.4	100.0	177.76
0.02	0.25	1.0	2.25	6.25	25.0	100.0	225.0	400.0
0.01	1.0	4.0	9.0	25.0	100.0	400.0	900.0	1600.0

If, for example, one had found by tests that for a length of 200 mm. and an opening of 0.5 mm. a time of thirty seconds was needed, one would obtain as time of exposure for a length of 300 mm. and 0.4 mm. opening :

$$\frac{0.562}{0.16} \cdot 30 = 105, \text{ seconds.}$$

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[*From Photographisches Wochenblatt.*]

THE COLORS IN PHOTOGRAPHY.

BY F. STOLZE.

(*Continued.*)

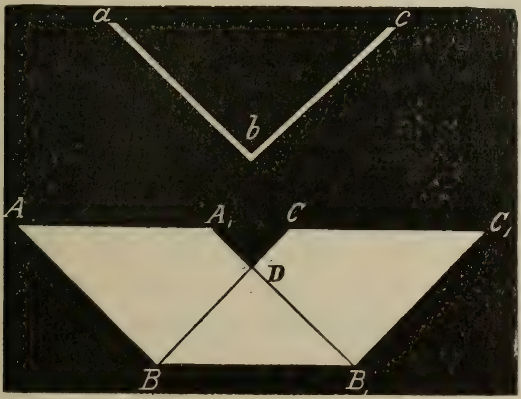
THE finest results are obtained by arranging two spectra with the different parts to cover each other.

To do this, a slit is made in the blind of a darkened room, of the form *a b c*, and this slit is observed through a prism with vertical standing edge. The angular side, *a b*, will then appear like *A A*, *B B*, and the angular side, *b c*, like *B B*, *C C*. These two spectra, as will be seen, have the part *B B D* in common, and within the same every color can be covered by any other color, it being at the same time quite evident how much lighter *B B D* is than all the other parts of the two spectra.

Besides, it can be seen distinctly to what extent each color is changed by mixture with the others. If the slit is so arranged that *b c* can be narrowed, all grades of color-mixture can be obtained thereby; but this result can be obtained still more simply, by removing the prism from its vertical to a more inclined position, whereby one spectrum can be widened more than the other.

Another very simple method is, to look through an inclined plate-glass toward the one colored surface, reflecting in the eye at the same time through the side of the plate-glass nearest the eye, the light of any other colored surface.

By means of this method, the colors of any two bodies can be mixed, the composite color so produced can even be mixed with a third by application of a second glass plate. By the angle of the glass plate one is enabled to control the supremacy of either color. Using this method, the blue color of the sky can even be mixed with chrome yellow; thus proving that the former is whitish indigo-blue, and not cyan blue, and the result of the mixture is a reddish-white. The light which has passed through colored diaphragms can also be compared in this way with that of opaque surfaces.



The most convenient means for mixing not only one but many colors, is the color-circle. Its principle is based upon the duration of the light impression in the human eye for some time after the light is extinct. If, therefore, the sectors of a disk are painted with different colors, and the same is brought into quick rotation (about 24 to 36 times a second), the several color impressions will follow one another so quickly, that separately they cannot be distinguished, but the impression is obtained, as if the disk was evenly painted with the composite color. If the rotation of the disk is not so rapid, a kind of glittering will take place, particularly in very bright light, which, however, at sufficient acceleration, is so insignificant that one might think the disk had come to a stop.

The only defect suffered by this method is, that the complementary colors do not give white but gray, while the colors, when they are to be saturated, absorb much light. Gray is only a low grade of the brightness of white light, and we know that a shadow upon a white ground looks gray. By suitable arrangements the colored sectors can be widened or made smaller, and their number reduced or increased, so that this instrument admits of an abundance of the most instructive experiments.

A review of the aforesaid will demonstrate easily that the general idea of all colors being based upon the three principal colors, red, yellow and blue, is an erroneous one. Aside from orange, green and violet consisting objectively of simple rays of definite wave lengths, it is also not possible to obtain all these colors by composition from those three. The impressions violet and orange can be mixed tolerably well, provided that indigo blue is selected. But indigo blue and yellow will under all circumstances give only blue, and even a greenish-yellow and a greenish-blue form only a very whitish-green. Red, green and violet harmonize a little better as ground colors, which in form of pigments, give only quite subdued and broken tones; because it is possible to mix blue out of violet and green, and yellow out of green and red, both, of course, not very brilliant, and far from the glossy colors of the spectrum.

If, therefore, it is objectively out of place to bring back all colors to three principal colors, the same hypothesis is subjectively justified. Theodore Young declares, by virtue of such a theory, that all physiological-optical appearances are very simple and complete. He assumes that there are three kinds of nerve-fibres, sensible to red, green and violet. Objective homogeneous light excites all three, but with red the first are excited strongly, the second and third weakly; with yellow the first and second moderately strong, the third weakly; with green the second strong and the first and third weakly; with blue the second and third moderately strong, the first weakly; with violet finally, the third strongly and the first and second weakly. If all three kinds of nerve-fibres are equally strongly excited, the impression of white light will take place. It can be easily seen, that according to Young's hypothesis the complementary colors will fill up to white, if it is considered that the more saturated colors have to be in existence in small quantity to obtain the mixture.

(*To be continued.*)

STIR UP THE AMATEURS.

BY MARY SCOTT BOYD.

It was only a wee bit of Hudson River scenery. Mountains with the shadows darkening the blue water, graceful willow-trees at the foot of a rocky descent; and not far off an old forest-king, denuded of branches and leaves, measuring his length along the pebbly beach—and the element of humanity, a grave man, seated on the fallen tree-trunk and reading from some book which gave him satisfaction, if one might judge by the pleased, intent look in his earnest face. I planted my tripod firmly and focussed my subjects—nature animate and inanimate—and in a moment more the exposure had been made, and only just in time, for with a sudden start the innocent victim of my photographic ardor had turned his head, raised his eyes and discovered me. I could beat no retreat, in fact, had no desire to do so, when the man spoke. I remembered, that I had before heard that same deep, full voice, and in a moment memory did its work, and I recognized that I was face to face with a well-known professor of one of our Northern colleges, and that his vacation months were spent with a widowed mother not many miles from my own home. That he was reading Herr Vogel's work, "Photography of Colored Objects," was enough to inspire interest. My pretty little outfit was not to be despised by a man who enjoyed photography himself, not so much perhaps for what it let him carry away of terrestrial views, although his Anthony's Satchel Detective Camera, which I found by his side, had been doing duty that afternoon, but I soon learned that he had been photographing the solar spectrum, and that the bodies celestial came within his lens, and that more than half his time was spent in star gazing and working with his telescope. His interest in photography of colored objects was very great, and from his wallet he drew out several beautiful pictures, for which the prepared plates had been used. From his teaching, the terms isochromatic and orthochromatic became clearly and delightfully intelligible. To many, perhaps, as to me, the idea of photographing colored objects is not quite understood, but to have once looked at those pictures, the whole warmth of color was felt, though the tone was only that of an ordinary silver print.

There were flowers and trees and birds in the delicate shading; all the gradations of color could be seen and appreciated. I settled myself on the log, and prepared to listen to the professor, who, when he mounted his hobby, was eloquent. It seems that last summer he had visited the famous Herr Vogel in his Berlin home, and from the lips of the kindly, enthusiastic German he had heard all the story of his discovery, with the many discouragements and few encouragements which he had encountered. Perhaps, secure in his acknowledged position as Director of the Laboratory of Spectrum Analysis, at Charlottenburg, and editor of the *Photographic Mittheilungen*, a five or six-page monthly, he can lay down laws now without dispute, but like every other inventor and discoverer in the paths of science, he was at the outset laughed to scorn. It was first in 1873 that he tried the effect of coloring matter on an ordinary English dry plate; some dye was used by which the plate became yellow, thus lessening the reflection. The plate behaved about the same with ordinary colored objects, but with the solar spectrum there was a slight augmentation of sensibility for the green. The coloring matter he then mixed with the emulsion, preparing his own plate; by repeated experiments he found that in using certain coloring matters the light became effective on the plate as the colors absorbed the light in some cases, reflecting it in others. Many were the crucial tests, each coming nearer success. From his friend, Dr. Zenker, of Berlin, he received the loan of a spectroscope to facilitate his work, and later, as faith in him became greater and his plans were not considered wholly chimerical, the Academy of Berlin furnished him subsidies for the purchase of spectroscopes for his own use. His first announcements of the discovery were met with ridicule. The *British Journal of Photography* was greatly amused by them. Even such scientists as Carey Lea, of Philadelphia; the noted physicist, Monckhoven; Dr. Abney, the writer upon photography; Schultz, Sellack and others, tried to prove Herr Vogel in error.

In 1883 his work "Photography of Colored Objects" was published. Then the professor opened the book and read me passages here and there. I found them interesting, but the scraps of personal intercourse and the information he gave me of his own experiments were far more satisfactory. He told of the dyes used, the best being made from trees and plants, as myrtle, plantain, etc. The professor was very enthusiastic upon the subject. I should like to have had other amateurs have the benefit of his advice. "Everyone should experiment for himself," he said. "Dr. Vogel had to make a beginning, and I think if all young people would enter into this work of photographing colored objects, some grand successes will be reached. I think the results of photography make it rank as the eighth wonder of the world," he added emphatically, and as I shouldered my tripod and bade him good-bye he called out "just work up your camera club to enthusiasm, tell them it will pay. I always stir up the amateurs when I can." And so do I.

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An agricultural paper says: "When flies are bad wash the horse all over lightly with a weak solution of carbolic acid." We should think it would be a better plan to wash the bad flies all over with a solution of carbolic acid. It might take longer to catch 'em, but it would require less acid.—*Norristown Herald.*

OUR EYES AND OUR WORK.

BY C. HETHTON LEWIS.

(*Continued from the International Annual.*)

In the normal state, the eye sees all objects over 20 feet off without difficulty, because the lens and retina are at their natural focus.

The diagram will show this:

R.   L.   NORMAL SIGHT.
(——————————)——————————————Object.

R. Retina. L. Lens of Eye. The line represents the rays of light coming from an object, and passing through the eye, and brought to a focus on the retina.

All eyes are not normal, however, and in the affection of most frequent occurrence, Short Sight, *Myopia*, the diagram will be thus:

R.   L.   SHORT SIGHT.
(——————   )——————————————Object.

R. Retina. L. Lens. It will be noticed that the line representing the ray of light falls short of the retina, consequently everything looks misty, just as it does on our glass screen when out of focus.

Long Sight, *Hypermetropia*, is the opposite defect and is represented thus:

R.   L.   LONG SIGHT.
——(——————————)——————————————Object.

It will be seen that the focus is beyond the retina.

There is another common imperfection termed Astigmatism; our photographic lenses are subject to this.

Take short sight first. This, unfortunately, is on the increase, is both hereditary and acquired, and is chiefly caused in the latter case by constantly viewing objects near at hand. The eye is bound to exert itself to focus for close objects, and the constant strain results in elongation from front to back, so that the image falls short of the retina. When short sight is manifest, it is important to secure accurately adapted concave glasses at once; this will prevent further progress of the affection which, if neglected, will lead to great inconvenience and probably to actual disease of the eyes.

The ordinary distance that a book or newspaper should be held from the eyes is about 12 inches; *this* print should be easily read 3 feet away, so that if the reader be unable to make out the letters at that distance, short sight is evident.

The retoucher, who is compelled to approach within 10 inches of the negative, is damaging his sight and should procure glasses.

Long sight (*Hypermetropia*) is the opposite to that just mentioned, the eye being insufficient in depth from front to back (see Diagram). The consequence is that for distant objects the eye is *forced* to focus, just as the healthy eye accommodates itself for near objects.

Hypermetropia is a prevalent defect and one not easily recognized. It sometimes gives rise to symptoms similar to *short* sight, and if wrong spectacles be accidently given (as has happened in some cases), the result is disastrous.

Those who suffer with this defect find their eyes trouble them ; they are sore and weak, and blinking is frequent.

It stands to reason that nerve force is exerted in focusing and the hypermetropic eye is always strained. This results in sympathetic nervous troubles of the system, often attributed to any cause but the right one. The remedy is to use convex glasses, which prevent the strain on the eyes.

Old sight (*Presbyopia*) is similar in effect to long sight, though in this case it is the *lens* which loses its power of accommodation. Convex glasses should be resorted to.

Astigmatism is not an uncommon defect, and arises from want of symmetry of the cornea or lens, the consequence being that distinct vision is impaired. It is not easy to diagnose, and special cylindrical spectacles alone will meet the case, in the prescription of which great experience and judgment on the part of the occulist is necessary.

If a clock face is looked at, and some of the figures seem lighter or more indistinct than others, astigmatism is present. The case is often wrongly treated with concave or convex glasses, which make matters worse. The accurate adjustment of cylindrical glasses is the only means of relief.

There are other defects of the eyes and sight which cannot here be touched upon; it is important, however, to bear in mind those to which I have alluded.

All who suffer with their eyes should consult an occulist at once, and by no means resort to spectacles without the advice of a skilful surgeon.

The eyes often differ in focus and require glasses accordingly. Short or long sight may exist with astigmatism; many complications may, in fact, be present, or the eyes may be actually diseased.

As a rule the retailers of spectacles know comparatively nothing, often leaving the customers to select his own glasses, with the chances of 110 to 1 that a fatal mistake is made. The quality of the glasses and exact fit of the frame are of vital importance. Finally, do not read or work in bad light; let the light fall on the work and not into the eyes. Do not stoop; keep the work as far off as possible, consistent with distinct vision. Look after your children's eyes and do not scold apparently dull children till you are certain that their eyes are fit for study.

I trust these hints my help may readers to view matters in a correct light, and that I may be allowed to conclude by wishing all a bright look out.

[*From Journal of Camera Club.*]

OUT WITH A CAMERA.

(*Suggestions as to Choosing Subjects.*)

BY MR. J. GALE.

Here we are—cameras in hand—a magnificent morning, thirty miles from London—"far enough from the madding crowd"—what shall we do?

Well! we have the choice before us of this lovely valley with its purling brook, close-wooded scenery, and scattered cottages; or we have the adjacent hills, with wide expanse of open fields and a grand horizon.

Is it to be simple landscape, or shall we see what we can find in the way of figure studies, or both? We have our single-view lens, and that other which we fancy is best for groups.

As yet not a zephyr disturbs the leaves, and only a few light, fleecy clouds, low down, are visible; we will give our attention to what is before us, for the clouds will gather by the middle of the day, and the wind will freshen as it has done each day lately; we can then turn to the hills—where there are broad expanses of open country, with teams at plough, and women weeding or hoeing—and the wind will interfere with us less—if it be not sometimes an advantage to have a little of it in our figure groups with landscape.

Yes, this valley with its gabled cottages and gardens full of color is very charming, and seems to present to us a picture at every turn of the road.

But how deceptive is color to the photographer; how often we are allured by a landscape or a group, and how difficult it is to realize that the charm consists in its color, which a painter can render but we cannot; divested of that it is, as a picture, flat, stale and unprofitable.

It wants a discerning eye to judge of what help color will be to us; the grays and the greens and the browns and reds of the lichens on the brick or stone walls, the rich colored mosses on the thatch, the yellow wash of the cottage front, are all renderable and effective in photography as giving gradations or contrasts of light and shade where wanted.

But those red-brick cottages and gardens ablaze with color, that sparkle in their background of bright green trees, will be nowhere, or scarcely visible in the photograph.

Let us get on and keep our eyes open—not to what we see before us only, or what may actually present itself to us as a picture worth securing, for we may often go a long way and not satisfy ourselves in that respect, but to more simple and homely bits, and turns, and corners, that, with the introduction of a figure, may give us a picture full of interest.

Here is a cottage—one of many in the village—very pretty, very nice, with the doorway partly overgrown with vines, and some worn red-brick steps leading up to it, and a latticed window abutting on it. One would not think of taking that as it is; but what a capital setting for a group!

Let us knock at the door and ask the occupier if we may take a "sketch" of her pretty doorway (if we were to call it "a photograph" she might mistake us for itinerant professionals and expect to be asked some day for payment—such things have happened). It may be she is a comfortable and obliging sort of woman, and would not mind our asking her to stand in the doorway with a broom in her hand, and one or two of those fair-haired children seated on the step, perhaps, with their dolls or their school slate.

Yes! she is pleased with the thought of it; she won't mind if you ask her to let you borrow a pail, or a jar, or a stool—and the bigger girl may come, the other is going to school.

Now, then, treat the subject as you think best. The woman may be seated, and the girl standing, slate in hand, doing her sums, or standing, broom in hand, or knitting needles, while the girl prepares to move off with a basket on her arm. There are half a dozen ways of treating this doorway and these two figures open to your fancy; but let it be a simple, natural treatment of the subject, the accessories subservient to the group, and only such as you would be likely to find at the cottage doorway in the ordinary way.

Do what you can to make the people feel easy and at home with you—occupy them so that they may think of what you have set them to do, and not of the camera; and be careful not to try your sitters' patience too much. You know the capabilities of your lens, and should know how much will be comprised in your view. Get the focus and the margins of your picture, and then set your models within it where you have made up your mind they will look best and most natural.

It ought to be scarcely necessary to focus again, but a last brief look on the ground-glass may be taken, and the plate inserted into the camera.

Your figures in position, you may do all the little finishing touches to the hat, the hands, or the attitude—see that the accessories are right—and perhaps you may first practice them in keeping still for two or three seconds, telling them you are not going to take them this time.

If they behave as you wish, they will have recovered their breath for the real exposure, for it is sometimes an awful ordeal to them (unless you have done your part nicely and kindly); it will not be so bad the next time.

But give them due notice of the real exposure, and due notice when it is done, for they are grouped, not looking towards the camera and will think it necessary to keep still until you liberate them.

Our sitters have behaved properly, the lighting was good, and everything favorable. One of those silver coins we have taken care to provide ourselves with will be an acceptable present to the little girl; or, just think, with such a negative as this will turn out, it will be well worth a shilling paid to the mother to buy a book, or another doll for the children. But do not promise a copy of the photograph unless you mean conscientiously to fulfil. The promise is treasured up, and the photograph looked forward to anxiously, and great will be the disappointment at its non-arrival, and disrepute of the amateur.

Now let us help, or offer to help put back the things in their places, and move on, as an old timber wagon and rustic team of horses that passed by while we were busy, has pulled up at the roadside inn, a little way up the village, and we must see if we can make use of it.

The group was well worth the second plate exposed upon it; it will give us the opportunity of experimenting, within limits, in the development, or correcting; for how seldom do we complete a negative without the thought that it might have been improved by a little difference in its treatment under the developer; but having made up our minds which is the better and more satisfactory one for the best results in silver, the other should be put away, only to come out on an emergency—perhaps to make a transparency, if thin, or a platinotype print if somewhat dense.

What a nice bit of old-fashioned English scenery ! "There stands the broad-wheel'd wain," drawn up at the village inn, the swinging sign-board and water-trough at its base—the wagoner with a foaming mug of ale drinking the landlord's health. How well the three horses (two of them a russet-gray) stand out against the background of trees !

Is it to be figures with landscape or landscape with figures ? Decide quickly, for we must interview the wagoner lest he be off, and having once started he cannot turn round to come back with that long length of timber.

A civil word makes it right all round; so we will go for a close-study subject. As they stand, the three horses, one behind the other, will never do; a foreshortened view will give an inordinate length to the appearance of the team, with the wide-angle lens, which we must use to include the incidents of the hostelry and its surroundings.

It is well; he will take off the two leaders and let them drink at the trough, while the wagoner—whip in hand—goes through the appearance of a drink with the landlord in front of the house.

The rustic ostler boy is to have charge of the drinking horses, so we instruct him as to what he is to do, and that he must not let the horses drink until we are quite ready. He is then to loll over the trough on the left-hand side, well in the foreground (he is a nice, smiling-looking lad, and stands easily and naturally) turned half away from us, and looking across the picture at the group opposite.

So, having got the margins of our picture—the house at the roadside on the right-hand and the wagon drawn up in front of it, with the figures between, the sign-post and water-trough across the road on the left—it only remains for the two horses to take their places at the trough drinking, which they will do of themselves when allowed; the glimpse of the way out of the village and out of the picture will be suggestive; the sun is on our left, a little to the front, and will cast a shadow of the signpost and the drinking horses well and definedly across the foreground of the picture.

Everything else ready, the boy tumbles to our instructions very kindly, and leads the horses with a halter to the trough and they at once drink; we are sure they will remain still for ten or twenty seconds, and the boy lolls over the trough just right, as if he were to the manner born.

The exposure is made without loss of time, and all appeared to be right.

To avoid every sensation or suggestion of the presence of the photographer in our picture has been our first aim. We do not see that there will be any sign of it unless it be in the gray horse left in the shafts; he was looking at the camera, probably owing to our being the last to speak or to move, but it will not matter. In this instance it is allowable, perhaps an advantage, in getting the spectator to exchange glances with the object which is the center of attraction (the horse in the team), and then to look round at the surroundings that go to make the picture.

There would have been plenty of time to expose another plate, as the horses remained drinking long enough, and we had it ready, hoping that one of them might finish its draught first, and perhaps raise its head over the other's shoulder, and thus the almost exact overlapping of the two horses as they drank at the trough would have been avoided; but the right opportunity did not occur. We are well satisfied, however. that all was right—better than usually falls to the lot of the photographer in a studied, if impromptu, design, with improvised materials and untrained models.

The wagoner's luncheon-time has been badly broken in upon by us, so we will ask mine host to let him have a good meal, and this time a real draught of ale, while we apply ourselves to the lunch that the landlord's good wife has provided for us in the little bow-windowed parlor.

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There is a floor-walker in one of the large dry good houses in this city, whose great toes point toward each other in the most friendly manner.

"What will you have madam?" said he to an Irishwoman, who was looking hoplessly around. "Calico." "Walk this way." "Walk that way, is it! Sure, I'd have you to know, sur, that my legs is not built that way, sur, and I couldn't walk that way if you'd give me the whole sture, sur."

ON TONING ARISTOTYPES.

BY P. C. DUCHOCHOIS.

When a silver salt is dissolved in a solution of sodium thiosulphate (hyposulphite), a double decomposition occurs, with formation of silver thiosulphate and of a sodium salt of the halogen or acid radical, which was united to the silver. The former is a very unstable compound, splitting as soon as formed into silver sulphide and sulphuric acid. These two actions are represented thus:

$$(1)\ Na_2S_2O_3+2\ Ag\,Cl = Ag_2S_2O_3+2\ Na\,Cl.$$

$$(2)\ Ag_2S_2O_3+H_2O = Ag_2S+H_2SO_4.$$ [*]

All the acids act on sodium thiosulphate, liberating thiosulphuric acid, which cannot exist in the free state, and soon decomposes into sulphurous acid and sulphur:

$$(1)\ Na_2S_2O_3+H_2SO_4 = Na_2S_4O+H_2S_2O_3.$$

$$(2)\ H_2S_2O_3 = H_2SO_3+S,$$

and this acid, $H_2\ SO_3$, then acting on sodium thiosulphate, generates both a tetrathionate and a trithionate of sodium:

$$2\ Na_2S_2O_3+3\ H_2SO_3 = Na_2S_4O_6+Na_2S_3O_6+3\ H_2O.$$

Now these polythionates are very unstable, passing in the solution of sodium thiosulphate, the former to trithionate and dithionate, and the latter to dithionate, sulphur being liberated during these transformations.[†]

Hence the ultimate action resulting from the presence of silver thiosulphate in solution of the alkaline salt, consists in the liberation of sulphur which, while in the nascent state, converts silver or any other oxiditable metal into sulphide.

When to a solution of sodium thiosulphate containing an alkaline tetrationate a silver salt is added, this salt is converted partly into thiosulphate, partly into tetrationate of silver, the latter undergoing the same transformations as the former, but liberating twice as much sulphuric acid:

$$Ag_2S_4O_6+2\ H_2\ O = Ag_2S+2\ H_2S\ O_4+S.$$

The action of auric chloride on sodium thiosulphate in excess gives rise to the formation of a sodic aurous thiosulphate and of sodium tetratrionate:

$$4\ Na_2S_2O_3+AuCl_3 = AuNa_3\ (S_2O_3)_2+Na_2S_4O_6+3\ Na\,Cl.$$

The sodic aurous salt is even less stable than the corresponding silver compound, being rapidly decomposed into gold, sulphur and sulphuric acid, when, in a solution of sodium thiosulphate, a series of chemical actions occurs similar to those above explained:

$$Au_2S_2O_3+H_2\ O = H_2SO_4+Au_2+S.$$

Therefore, metallic silver placed in a solution containing silver and aurous thiosulphate, is sulphuretted, and eventually a deposit of gold is formed upon it, this deposit not being the result of the action above represented, but that of a

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[*] If silver thiosulphate be formed in an excess of the sodium salt, it unites with two atoms of it.

$$3\ Na_2S_2O_3+2\ Ag\,Cl = (Na_2S_2O_3)_2\ Ag_2S_2O_3+2\ Na\,Cl.$$

The stability of the silver thiosulphate is thus improved, but it is nevertheless liable to decomposition either by the action of light, heat, and spontaneously in a certain period, the presence of a polythionate hastening the chemical change. As it will be seen further on, such a compound—a tetrationate—is formed when auric chloride is added to a solution of sodium thiosulphate.

[†] The action is, however, more complex, for the solution becomes acid to test paper.

substitution. It should be remarked, however, that owing to the rapid decomposition of the aurous thiosulphate, it is a question whether any gilding process takes place when the solution is a few days old.*

It is on these chemical changes that was based the toning process in the infancy of our art. At first we used to fix the proofs and, after washing, to induce sulphuration by placing them in a weak solution of sodium thiosulphate acidified by acetic acid. But so treated, the proofs faded very rapidly. Latterly, G. Legray and Blanquart-Evrard having observed that an old fixing-bath possessed coloring properties, were led to ascertain that it was due to the silver salt, and accordingly silver nitrate, generally, or silver chloride was added to produce the desired effect.

Alum was also used either to clear up old muddy baths, saturated with silver thiosulphate, or to impart coloring properties. An alum solution was also employed after fixing (Ths. Wilson, W. T. Newton).

In 1849, I think, Legray, and, after him, O'Shaugnessi, advised the addition of auric chloride to the fixing-bath, whereby the proofs were more rapidly colored and acquired a splendid sepia, purple or black tone. The toning process was consequently to impart to the photographs a certain color by the agency of gold (?) and sulphur. This was an improvement, no doubt, but, although more permanent, the proofs faded in a shorter or longer period. Even those obtained by the negative process, that is to say, by development, and which, therefore, were formed by a greater deposit of metallic silver and little sulphuretted on account of the gray-black color of the reduction, did not, with few exceptions, resist to the test of time. Indeed we could not understand why proofs consisting of silver sulphide—one of the most permanent salts known in chemistry—and of gold, probably in the form of a sulphide, could fade sometimes in the short period of three or four months. This we know well now. We know that in presence of organic matter and moisture, the black silver sulphide is transformed by an isomeric change into a brownish yellow sulphide. The picture has not vanished. It is there and can be revivified either by Davanne and Girard's process (1855), or that of Zandaureck, lately published, both processes being based on the action of auric chloride on the compound in question.

The first process of toning by means of a deposit of metallic gold alone, in order to insure permanency, is due to Legray (1852). It consists of printing very strongly, then of treating the proofs with a solution of auric chloride acidified with hydrochloric acid, when, after washing off the acid, they are fixed in a new solution of sodium thiosulphate. Five years later, Legray published another process, in which the hydrochloric acid is discarded and replaced by calcium hypochlorite (bleaching powder). This process we still use, having the property of giving a very good white and of bleaching the sensitized paper tinged brown by keeping. Since then many other gold compounds have been devised, as the reader knows.

The chemical action occurring in the alkaline toning process, as it is termed, is one of substitution, the gold taking the place of the silver, which proves that the silver compound is reduced by light to metal, for no chloride can give rise to this phenomenon.

$$Au'Cl_3 + Ag_3 = 3\,Ag\,Cl + Au.$$

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*It is doubtful whether any gold be deposited at all in any case, for when a positive proof is placed in a solution of the sodic aurous thiosulphate, the action proceeds very slowly indeed, and sulphuration soon occurs.

After fixing, the proof consists, however, of silver, gold, a certain organic silver compound, which is insoluble in the fixing agent and, probably also, of a minute quantity of silver sulphide as the analysis leads us to suppose. The proofs are consequently as permanent as it is possible to obtain them, provided the usual care be taken in the fixing and washing operations; but the latter can never be perfect, for traces of the fixing solution are mechanically retained in the fibres of the paper—unless eliminated by chemical means—thus adding another cause of fading to those inherent to the composition of the image itself. Now after the researches on the causes which produce the alteration of the proofs made by Davanne and Girard, the committee appointed by the London Photographic Society, by Hardwich, Monckhoven, Sutton and others, showed conclusively that to insure the greatest permanency, sulphuration should be avoided and the proofs colored as far as possible by gold alone, is it not astonishing that the gold and sulphuretting toning process of old should be revived to color aristotypes and advised by photographers we consider as very high authorities. Our art is on the decline, pecuniarily speaking ; not only because most photographers thinking that nothing is so easy as to take a portrait, and that it suffices to image twisted, theatrical and pretentions attitudes to make an artistic likeness, neglect the study of the portraits of the great painters and even the first principles of posing and lighting ; but because also our photographs are not permanent. Every body knows that now. And who will give a high price for a picture, no matter how beautiful, which in the course of a few years will fade, and furthermore, show signs of deterioration in the period of three or four months ? I wonder why the Saronies, the Kurtzs, the Landies do not entirely discard silver printing for the platinotype or the phototype process, which yields absolutely permanent prints !

To return to the toning and fixing of aristotypes, there is a process almost forgotten by which sulphuration is avoided, the proofs when finished undergoing no other alteration, but that arising from the agents of oxidation and of sulphuration in the air. I refer to the use of potassium or ammonium sulphocyanide. The process is as follows:

After washing off the silver nitrate, the proofs are toned in the following gold solution, which is ready as soon as colorless, and keeps quite well:

Ammonium sulphocyanide........................	200 grains	—	3.	grams.
Gold terchloride neutralized by sodium bicarbonate...	4 to 5 "	—	0.07	"
Water......................................	1 pint	—	100.	c.c.

When the desired color is produced, the proofs are first immersed for five minutes in

Ammonium sulphocyanide........................	3 ounces	—	.63	grams.
Water......................................	1 pint	—	100.	c.c.

Then, after rinsing in one or two changes of water, in a similar solution to which is added ammonium carbonate just enough to give an alkaline reaction to the liquid, when after three or four minutes the proofs are fixed and washed as usual. To ascertain whether all traces of the fixing compound are eliminated the drippings of the proofs are collected in a saucer and a drop of iron perchloride—or any other ferric salt—is added, which instantly produces a deep blood coloration characteristic for the sulphocyanides.

The fixing solutions can serve over and over again in precipitating the silver sulphocyanide to metal by placing in the solutions a cylinder of zinc, such as used for electric cells, but of course not amalgamated, and strengthening the solutions.

The chemical actions are represented thus :

$$NH_4\,Cy\,S + Ag\,Cl = Ag\,Cy\,S + NH_4\,Cl$$
$$2\,Ag\,Cy\,S + Zn = Zn\,(Cy\,S)_2 + Ag_2$$

PHOTOGRAPHY IN AFRICA.

It is no exaggeration that among the many travellers going to Africa with photographic intentions there are only a very few who will bring home some passably good pictures, and even most of these are in some way defective.

In most of the larger depots along the coast can be found the remnants of photographic equipments, having been left there in disgust by their former owners. The cause of this is to some extent due to the mistaken idea of the general public, that the art of photographing is extremely easy and simple, a mere mechanical contrivance requiring no practical knowledge. Another cause is of a more local nature, such as great heat and want of suitable premises.

The latter was particularly what I had to contend with when I paid my first visit to that country some years ago, and before dry plates were in such general use as at the present time.

In three large cases I carried a whole chemical laboratory, including apparatus for distilling water and dark tent. But—although thus equipped thoroughly and prepared for any emergency, "many were the failures that befell me."

What a constant combat with the narrow room in those loam and straw huts, with dust and dirt in abundance, which characterize the dwellings of the negroes, with wind, rain and the sun with his vertical rays, without shadows or gradation of light, and finally with the subjects themselves, being frightened, restless, and cutting all kinds of grimaces most unnatural.

I sit at my table, writing. Then at once I see a "Soba' (chief of a tribe), with his attendants in single file behind him pass my window—if window it can be called. "André," (my servant) "quick ! I want to take their picture ;" and André is already in the street, to call back the ebony-colored gentlemen. I look in the meantime for the whiskey-bottle, swear like a trooper, that these fellows always come at the inopportune moment, try to smile, step outside, shake hands with the subject, and before he knows of my intentions, I have him placed on a chair and the whiskey has already done its duty." André explains the situation, promises half a dozen "makotas" (a small copper coin), and this silences generally their suspicions.

My other servants have become nervous during this time. As usual, no water again. One blames the other. They know that I have given strict orders to keep the pails filled with water—instead of that they are full of Meniok(flour.). "Joas ! Manuel ! quick !" and they run to the brook to get water.

Auguste, the cook, has orders to watch the subjects, with their stealing propensities. Now I go for the key to my photographic sanctuary; only after a few forcible manœuvres I am able to open the door, and not before about a cubic foot of the loam has made acquaintance with my head. My own fault—why did I not see to it this morning that everything was in order?

The silver-bath has to be filtered—all full of insects again—will it work yet? No more developer—the cyanide solution looks like a miniature fish pond. Oh! and how the glass plates look, which were cleaned so conscientiously yesterday—all dirty again.

Now I have to be quick—not a minute is to be lost. André lights the candle in the cadmium yellow-paper enclosure; I discover a few holes in the wall, which I close quickly with a few rags; now comes the water and everything is in readiness. The plates are clean, the duster is on its proper place, but wrapped up in tissue paper to protect it from spider webs, the collodion bottle, the silver-bath, the developer, intensifier, water, cyanide of potasium—everything is ready.

I hope only that Auguste has not given too much whiskey to the Soba; he begins to talk already rather incoherently.

Now the pose. André follows me with the camera. To-day the wind comes from the south; consequently, I cannot place him in this corner; the other corner is not favorable for the sun; before I decide I hear André's voice: "The Soba wants to leave, sir, because I refused to give him any more whiskey." My answer, "Give him more whiskey! Quick, André, put yourself in position now, that I can focus." Now, André, let the rascals come and place themselves upon the mat, smiling at the same time towards the objects.

These have already become angry about the long detention. With more authoritative force than kindness, I guide them to the place of execution. Here! The two fellows with the flint-locks on the side of the Soba; the other one I want more to the front; what nice brass bracelets he wears; the other four fellows I want in a kneeling position; this rascal I do not want at all: I shall put him beyond the focus of my lens.

The group is ready, but how! One has a high shoulder, the other spreads his fingers; those on their knees threaten to tumble over every minute.

I crawl under the focus-cloth. If they only will keep quiet for a few minutes. "André! André! Quick, for heaven's sake! Look out that no one moves!"

I go to prepare the plate. How that dark-room looks. Boxes and barrels, timber and all kinds of material, covered with dust and dirt—every step a chance to tumble. I take the plate from the silver-bath, put it into the holder, and leave the dark room.

For heaven's sake! What do I see? Where is my group? They have disappeared from the mat and are laying under some shady tree! There is no use talking about pose now. What does it matter? I will risk it and take them as they are!

There! Thank God it is done, and I hope the plate is not under-exposed. If the negative is only passable, I will make it go, and be satisfied.

Such is the history of almost every plate taken on the sandy plains or jungles of Africa—and such was my experience.

DEATH OF A WELL-KNOWN TRAVELER.

We regret to note the death of Mr. Seymour, the well-known traveler for Hiram J. Thompson, of Wabash avenue, Chicago. He was taken down with typhoid fever several weeks ago, but as he was blessed with a very strong constitution, all had hopes of his ultimate recovery. A relapse unfortunately set in, however, and his demise occurred on September 26th.

Mr. Seymour was connected with Mr. Thompson's firm for many years and his many and truly noble qualities had won for him numerous staunch friends who will greatly grieve over his loss.

OUR ILLUSTRATION.

The handsome study given as a frontispiece of this issue of the Bulletin is from the studio of Mr. Anderson, the well-known New York photographer. He has rendered his name famous from his enormous picture of the Seventh Regiment of New York, which was noticed in the Bulletin some time ago. The pictures he has prepared for the Bulletin rank among the best specimens of our art, and we hope will prove instructive studies to our subscribers.

THE ROCHE PATENT SUIT.

We notice a paragraph in the *Photographic Times* of September 28th, stating that the suit of E. & H. T. Anthony & Co. against W. Irving Adams, under the Roche Patent, has been discontinued. This does not state the fact quite accurately.

The suit of E. & H. T. Anthony & Co. was against the Eastman Dry Plate and Film Co., the Scoville Manufacturing Co. and Mr. Adams, all being joined as defendants. Mr. Adams was made a defendant as a matter of form, and at his request, and the counsel of Messrs. Anthony & Co. not objecting, the suit was discontinued as against him only, but proceeds against the others.

I could not think of doing without the Bulletin. I am in possession of nearly all the different photographic publications, but none fills the place of the old Bulletin.
George P. Pitty.

I think the Bulletin is the most practical journal for professional photographers I have ever seen.
J. K. Chase.

ANTHONY'S

Photographic Bulletin.

EDITED BY

Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.
and a corps of practical assistants.

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E. & H. T. ANTHONY & CO., Publishers.

ST. LOUIS CAMERA CLUB.

ST. LOUIS, SEPTEMBER 11, 1888.

A SPECIAL meeting of the St. Louis Camera Club, in their new rooms in the St. Louis University Buildings, corner Grand avenue and Pine street, was called to order by *President* BAIN.

The minutes of June 19, 1888, were read and approved as read.

Applications for active membership were received from Robert E. Collins, Samuel B. Ball, Dr. Eustathius Chancellor, Alfred G. Robyn, William M. Bulkley and George B. Webster, and were referred to the Membership Committee for investigation.

The Executive Committee submitted the following report, which was approved and filed:

"Resolutions adopted at a meeting of the Executive Committee, held on August 10, 1888, at the office of *President* BAIN.

Whereas, It has pleased the Divine Providence to take from our midst our brother and fellow member of the St. Louis Camera Club, and to deprive this Association of one of its most valued members and photography of a most earnest amateur.

Be it Resolved, That the St. Louis Camera Club expresses its sincere sorrow for the loss of its member, and tenders to the widow of the late Henry L. Bailey its condolence and sympathy in her present great bereavement.

Be it further Resolved, That a copy of these resolutions be spread upon the record of the Association, and sent to the widow of the late Henry L. Bailey.

ROBERT E. M. BAIN,
C. M. CHARROPPIN, S. J.,
ELIOT C. JEWETT,
JOHN W. DUNN,
Executive Committee.

The Lantern Slide Committee were authorized to buy boxes to ship the slides of 1887-88 to the Executive Committee of the *Interchange*, for the purpose of selecting the slides to be sent to England.

The subject of the discussion was "Hydroquinone as a Developer for Lantern Slides."

Father Charroppin uses "Seed's Developer," but finds that, undiluted, it works too intense. He adds one-half water, and then finds it under much better control than ferrous oxalate, which he formerly used. Even an overtimed slide can frequently be saved, because the development does not hurry.

Mr. Blattner uses Dr. Piffard's formula (previously published in the BULLETIN), both for negatives and positives, with very satisfactory results.

Mr. Butler finds Dr. Piffard's formula gives excellent results when fresh. Should the developing tray contain any trace of pyrogallol, the solution discolors at once and thus spoils the stock solution to which it is returned. He therefore prefers to mix the developer fresh each time, according to the following formula, which had been thoroughly tested by *President* BAIN and himself, and found to yield excellent results:

Hydroquinone............	3 grains.
Carbonate soda (granular)..	4 "
Sulphite soda (granular)....	8 "
Water....................	1 ounce.

Three ounces of this will develop 18 or 20 slides, at a total cost of two cents, and may then be thrown away.

Many of the slides intended for the *Interchange* of 1888-89 were thrown on the screen.

The Club then adjourned to meet on Tuesday, September 18, at 8 P.M.

WILLIAM M. BUTLER,
Secretary.

St. Louis, September 18, 1888.

The regular meeting of the St. Louis Camera Club was called to order by *President* Bain.

The minutes of September 11, 1888, were read and approved as read.

The Membership Committee reported, recommending the election of Samuel B. Ball, Robert E. Collins, Dr. Eustathius Chancellor, Alfred G. Robyn, George B. Webster, and William M. Bulkley to active membership. On separate ballot, they were duly elected and the Secretary was instructed to notify them thereof.

Mr. Blattner was authorized to furnish gas for the lantern for the next meeting.

The application of Dr. Henry H. Keith for active membership was referred to the Membership Committee.

There being no further business, the Club adjourned to meet on Wednesday, October 3, 1888, at 8 p.m.

William M. Butler,
Secretary.

THE AMATEUR PHOTOGRAPHIC SOCIETY OF BALTIMORE.

At the tenth regular meeting of the above association, held Friday, September 21st, the *President*, Mr. Isaac T. Morris, in the chair, and Harry D. Williar, *Secretary*, with fifteen members present. The roll call noted a slim attendance, as many of our members are still out of town for the summer, and others off on photographic jaunts, some as far as Europe, others in Alaska and California, and we hope with as much enthusiasm as has been shown of late that the coming winter exhibition will show some fine results in the way of slides. The committee on the last slide exhibition reported a surplus of $198.45 over the current expenses attending the exhibition and the members were highly gratified at the result, and the proceeds are to be devoted to improving and fixing up our new quarters, which, by the way, are now very nice, and when the money now appropriated for that purpose is expended, we expect to have as nice quarters as any other society in this country. A change in our by-laws was adopted, allowing any acceptable person to become a corresponing member upon the annual payment of $5, and to be entitled to all the privileges of the society except that of voting. Exhibits of prints and negatives were shown by Messrs. Williar, Slauts, Norris, Wingo, Trimble and Dorme.

A committee was appointed to prepare an excursion for the members to the great Falls of the Potomac, for the purpose of taking views. It is expected that about eighteen or twenty will go, and possibly more will attend.

We have at present a membership of three honorary, three corresponding, fifty-five active and ten lady associate members, making a total of seventy-one members, an increase of thirteen during the summer, and we are now in a healthy financial condition, and the prospects are that during the coming winter our membership will be largely augmented.

Harry D. Williar,
Secretary.

CHICAGO LANTERN SLIDE CLUB.

The opening exhibition of the Chicago Lantern Slide Club of Chicago Amateur Photographers took place on Tuesday evening in the First Methodist Church. A large and appreciative audience thoroughly enjoyed the novel and unique entertainment. Professor Donald Fraser, one of the members, gave an illustrated lecture on Burns and Scott, their times and life about Edinburg, Scotland. Miss Belle Brown, Miss Mary Woodhead and Mr. Adam Craig contributed to the entertainment several Scotch songs and recitations, while Miss Bigelow, besides an accompaniest, gave a few whistling pieces. The lantern was operated by Dr. Sheardown, of the McIntosh Co., and with ether and gas got a beautifully soft yet brilliant light. The views were grand and called forth continual applause.

We have good reasons to be proud of our first public entertainment, and expect several rare treats the coming winter. The October meeting will have for interest studies from slides of vacation trips, and as the members are working hard to excel in slide work our interchange set should show up well when it reaches the East.

W. A. Morse,
Secretary.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

Informal Meeting, September 19, 1888.

The *Vice-President*, J. B. Gardner, called the meeting to order, and said:

"*Gentlemen and Fellow Members:* It has been decided to have, to-night, a social talk on the subject of "Lantern Slides." As an introduction to this topic, allow me to say,—

Since the introduction of dry plates, the making of lantern slides has become a favorite amusement with many amateurs, and in many instances the work thus produced deserves the highest commendation. Professionals, however, who have made a specialty of this branch of photography, and who have supplied the leading dealers with slides made by the collodion wet-plate process, contend that their method is superior; and consequently, the most salable in the market.

That many of the dealers in lantern slides are, as a rule, prejudiced in favor of the wet-plate process, there is little doubt. Hence the question arises, must the makers of slides submit to their decision? It would appear that they must, if they wish to sell the products of their labor, or these dealers must be converted to the belief that slides can be made equally well, or better, by the dry-plate processes.

Now, as there are present with us to-night a number of experts in both the wet and dry-plate processes, cannot they devise some means of getting at the real truth concerning this matter? Could not this be demonstrated by giving the same negatives to the advocates of both the wet and dry-plate processes, and then comparing the slides thus obtained? Would not this test materially aid in settling this question? And finally, is not this a matter worthy of our most careful attention?

Would we not be doing a service to both the amateur and professional, if by any means we could hit upon some method that would yield the most favorable results? Can we better accomplish this than by comparing the work of each with that of every other, and by giving a detailed statement of the manner by which the different results have been accomplished? Such a procedure might be regarded by some as giving away their secrets, and so stimulate and increase competition. But we regard the art as a science rather than a secret process, and therefore believe it cannot reach its highest usefulness without the consociation of a great variety of talent. That it requires not the brain of one man, but the combined ability of many, and in this union only will we find our greatest strength.

The amateur often labors under the disadvantage of false praise; and, hence, he above all others, should compare his results with the work of his compeers, and in this way only will he win the praise that is justly his due. It is not the policy of the professional to criticise without being paid for it; and so he often extols the work of his amateur friend without noting its defects—knowing it has been submitted to secure his approval, rather than his censure. And wishing to be regarded in the light of a friend, he indulges only in praise.

Should such work, however, be offered in the market, its defects would be instantly pointed out. It is here the amateur will meet with the keenest criticism, and it is here he will be goaded to a perfection in his work, unattainable in any other school.

Hoping that this brief preface may be suggestive of thought respecting the subject in hand, I now have the pleasure of introducing to you one of our oldest and most expert workers in lantern transparencies, Mr. T. C. Roche.

Mr. ROCHE then exhibited and briefly explained a large number of slides made by the following processes—with the exception of the Woodbury and Ferrier French slides, he said, they were the work of his own hands—some of which he made over twenty years ago, and so far as he could perceive, they had lost none of their original brilliancy.

The first slides submitted were those made by the "Collodio-Chloride Process," the second were the Woodbury; third, Carbon; fourth, Albumen; fifth, Coffee; sixth, Collodion Wet-Plate; seventh, Collodion-Emulsion; eighth, Roche's New Chloride Albumen.

This last he regarded as superior to any other process he had used, and, hence, believed it would come into general favor.

Mr. Roche said he would be glad to answer, so far as he was able, any questions respecting the subject in hand, barring such knowledge as he might possess concerning processes held by their inventors as secrets.

This lead to a volley of questions and answers, pertinent only to those present, and so the evening quickly passed while enumerating the variety of ways by which slides could easily be made.

Mr. EDWARD BIERSTADT recommended the ordinary negative bath and collodion, washing the sensitized plate under the tap and then submerging it in a ten-grain tannin solution, and while wet exposing it about double the time required for a negative, developing with

Pyrogallic acid	3 grains.
Tannin	3 "
Water	1 ounce.
Twenty-grain solution of silver from five to fifteen minums.	
Fixing in hypo-sulphate of soda	1 ounce.
Water	8 ounces.

And finally, toning in a weak solution of suphuret of potash.

Mr. Thomas Faris gave a process substantially the same as the above, with the exception of the toning or coloring solution, which was as follows:

Water	32 ounces.
Proto-sulphate of iron	1 ounce.
Citric acid	½ "

Mr. Faris stated that this solution when combined with a ten-grain silver solution, also served as a very efficient re-developer.

Mr. Bierstadt said that in harmony with the suggestion of the Chairman in his introductory remarks, he should be pleased to loan a set of negatives, from which each of the experts present should make slides in harmony with their individual preferences, or by the processes which they might deem the best, and present them for exhibition at some future meeting. This friendly competition being accepted by those it was offered to, it was decided that at the regular meeting October 2d, the entertainment should be a lantern exhibit of the slides already shown as examples of the various processes, together with those made from the same negatives by different processes and by different experts. At the conclusion of the discussion on Slides, Mr. O. G. Mason exhibited and explained a "Finder," which he believed possessed many advantages over many now in the market. Mr. Thomas Faris exhibited some very excellent examples of the aristotype process. The Section then adjourned.

Regular Meeting, October 2, 1888.

President Newton in the chair.

The *Secretary* reported that the September numbers of the photo-journals and papers annually contributed to the Section had been duly received.

The Chairman of the Executive Committee reported that the subject for the November meeting would be duly announced on the usual postal notices, and then read the programme of the evening.

The Chairman of the Lantern Committee read a report, and the work for which it had been appointed being accomplished, the committee was discharged.

Dr. Ehrmann then exhibited and explained the "Kodak Camera," and illustrated its principal features by means of the lantern.

O. G. Mason exhibited an attachment to the ordinary gas jet, which gave an incandescent appearance to the flame, and stated that by thus changing the color of the light it could be made much more available for photographic purposes. The prize pictures that had been placed on exhibition by Dr. Arthur H. Elliott, and which he had previously noticed in Anthony's Bulletin, he again described to the audience; and an invitation was extended to all to examine these pictures more minutely at the close of the regular exercises. A unanimous vote of thanks was extended to Dr. Elliott, for his very instructive and pleasing contribution to the programme of the evening.

It was then announced that the remaining portion of the evening would be occupied in a lantern exhibit of slides made by a great variety of processes, and it would be left with the audience to determine which one of these processes was the best.

The following, as named and briefly described by the Chairman of the Executive Committee, were then contributed by Mr. T. C. Roche, who announced the title of each picture as projected:

First.—The Albumen Process.

Second.—The Woodbury Process.

Third.—The Carbon Process.

Fourth.—The Collodion Chloride Process.

Fifth.—The Wet-plate Process.

Sixth.—Anthony's Emulsion Process.

Seventh.—Roche's Chloride Albumen Process.

Besides these, Dr. Ehrmann, Messrs. Fisk and Ripley exhibited several dry-plate processes. At the conclusion the President called for an expression of opinion on the merits of these various processes, but no definite or harmonious conclusion could be arrived at by the disputants.

On motion, a vote of thanks was tendered to all the contributors, and the Section then adjourned. A large number, however, remained, notwithstanding the lateness of the hour, to examine more critically the prize pictures and to express their feelings of delight that photography was capable of expressing so much in the realm of æsthetic art.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the Bulletin. *Correspondents will please remember this.*

Q.—S. W. S. writes: Will you be kind enough to give me a formula for getting a pink tone on silvered albumen paper. The tone I have referred to is similar to the tone of frontispiece "Dawn" in photophone, in the "International Annual." Will you also give me a formula for making "blue paper" for copying architectural designs?

A.—The tone you refer to can be obtained on albumen paper by first giving the prints a bath in very weak acetic acid to turn them red (say 1 dram of acetic acid in a quart of water, or 1 cubic centimetre in 1,000 cubic centimetres). Then tone in a gold bath made neutral by shaking with precipitated chalk and adding about 4 grains of chloride of lime to every ounce of bath. The bath should be allowed to settle, when it can be poured off clear before using. A good blue print formula is as follows:

No. 1.

Ferricyanide (red prussiate) of potassium	35 grams	—	539 grains.
Water	240 c.c.	—	8 ounces.

No. 2.

Citrate of ammonia and iron	53 grams	—	816 grains.
Water	240 c.c.	—	8 ounces.

Q.—K. C. N. writes: Can you give me, through the next BULLETIN, a good formula for sizing blue print paper?

A.—Use gum arabic with the blue print mixture, or a solution of gelatine about 5 grains to the ounce.

Q.—J. B. B. writes: Can you please tell me in what number of your BULLETIN that you gave the formula for making blue printing paper?

A.—See answer to K. C. N., given above.

Q.—W. R. L. D. writes: I wish to know how the great sensitometre of from 25 to 60 is produced and yet have no fog? I desire a formula for an emulsion, with the exact proportions of ingredients which will give high grade emulsions with a sensitometre of 30 to 60, with the details of making from the first mixing to the last washing. I have read "Eder" and "Abney," and all I could find in the different journals, but I have not as yet found such a formula, but I know such exist. If any one can give me the desired information through the colums of the BULLETIN I will try to return the favors.

A.—We cannot give the information that our correspondent desires; but perhaps some of our subscribers may be generous enough to do so.

Q.—W. S. W. encloses print and writes: Will you kindly favor me with information regarding the following: I enclose a print that is badly mottled. I know that it is the hypo, but the perplexing part of it is that part of the batch comes out bright and clean, yet all receive the same amount of washing. I leave them in the hypo bath about two minutes. Hypo, 1 ounce; water, 8 ounces, and ammonia at the rate of 1 dram to the quart. I am afraid to leave them in the bath any longer, because the hypo fades out the color. I print deep, too. I wash them under a heavy running stream of river water (croton), wash each side three times, giving each print about five minutes wash. Is it the time I leave them in the hypo or do they need more washing? Is there anything else used for fixing besides hypo? Another trouble I have in photographing is the fact that whenever I use a diaphragm it almost invariably results in a "bull's eye" on the negative, all else good but the disc in the negative. When I take an instantaneous view with a diaphragm, I have no trouble but a time exposure, using a diaphragm, I get the above result even on cloudy days.

A.—The trouble with your print is that the hypo solution or the water that you wash the print in is too warm, or both are too warm. Use colder solutions and water and you will have no further trouble. Your time of fixing is rather short for good permanent prints; we should fix about ten minutes to make sure that all the silver compounds are dissolved. In regard to diaphragms producing flare-spot, this is probably due to the fact that the opening is too far from the lens, or the opposite may be true. Try moving the diaphragm further from or nearer to the lens.

Q.—A. F. B. writes: Is there anything published that will help me in photographing the retina of the eye?

A.—A paper on this subject was published in the English photographic papers a year or two ago, but we cannot now find it. If you can get a file of the *Photographic News* or *British Journal of Photography* you may find it during the past four or five years.

Q.—J. W. writes: On page 486, line 31 of your BULLETIN, it says 75 grams of potash; does that mean caustic potash or sulphate of potash?

A.—The term used means carbonate of potassium, which the Germans called potash.

Q.—D. Y. A. writes: Can you tell me of any book or paper that gives complete instructions for making the popular enamel photographs?

A.—The method of procedure was given in the BULLETIN for June 23, 1888, page 383. It is too long to repeat here.

Q.—C. C. S. writes: Please give full directions for charging and using Laudy's oxygen generator.

A.—This was fully described in the BULLETIN for 1886, page 294, a copy of which can be obtained from our publishers.

Q.—E. O. T. writes: Please inform me through the BULLETIN why my silvering tray becomes coated with color corresponding to color of my paper. It washes off readily with water. Give preventative, or is it unavoidable. I use porcelain tray and pense paper. How can the black color be removed from bottles used for silver baths?

A.—We do not quite understand your question. Is it not silver chloride from impurities in the water you use? The black can be taken out of bottles that have held silver baths by putting dilute nitric acid in them.

Q.—J. R. M. writes: Inclosed is a print I wish you would examine and tell me through the BULLETIN as soon as possible what the trouble is; have been troubled more or less during this summer.

A.—This trouble comes from the hypo bath or other solutions being too warm and then using cold water, or the reverse.

Q.—J. S. H. writes: Will you kindly give us the formula for procuring such tones as that which illustrated the BULLETIN of August 11, 1888, *i. e.* "Good Morning." We admire the tone very much and would like the formula; answer through BULLETIN.

A.—You can obtain tones like the one referred to by using the formula given in the BULLETIN for September 22, 1888, page 576.

◆

Views Caught with the Drop Shutter.

THE HESLER PHOTOGRAPHIC CO., of Chicago, send us a handsome series of photographic reproductions of views in Lincoln Park, made by a process of their devising. They are after the character of indotints (gelatine prints), and are interesting souvenirs of Chicago's noted park.

Messrs. ALLEN & ROWELL, of Boston, send us a neat little pamphlet upon the merits of the Carbon Process, which was written by a well-known Boston author. The statements are remarkably clear and true, but the trouble of the process keeps it from being popular.

R. H. MORAN, the well-known photographic merchant, of New York City, has removed from 245 Centre street to 396 Broome street, this city.

FROM Detroit papers, we note that Mr. George Angell has celebrated his 25th business anniversary in that city. Two years ago he moved into his present location, which was arranged specially for his use. It occupies four floors, with an area of 10,000 square feet, a wide difference from that used in 1863, then only 324 square feet. Such is the reward of perseverance.

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EVENING POST JOB PRINT, N. Y.

By George A Nelson

Photogravure Co N.Y

"The Little Farmer"

ANTHONY'S
Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

OCTOBER 27, 1888. Vol. XIX.—No. 20.

THE NITRIC OXIDE FLASH-LIGHT.

Some of our correspondents have written us from time to time about the use of a mixture of nitric oxide gas and carbon disulphide vapor, as a means of producing flash-light pictures. A crowd of other matters having forced themselves upon our attention, we have had to defer a consideration of this subject until the present time.

The use of nitric oxide gas and carbon disulphide vapor for producing photographic negatives is by no means new. We well remember seeing experiments of this kind made many years ago when we began our first studies of chemistry. It has been long known that a mixture of hydrogen and chlorine when mixed in the dark, or in a yellow or red light, will remain without any apparent action upon one another for some time; but if such a mixture is brought into sunlight, the two gases unite with explosive violence and form hydrochloric acid gas. If instead of sunlight, the light from a mixture of nitric oxide and carbon disulphide vapor is used, the same violent union of the two gases will take place, producing the same hydrochloric acid gas. From these experiments it is evident that the light from the nitric oxide mixture is chemically almost as active as sunlight.

As early as 1874 a German chemist named Sell, sought to utilize this mixture for the production of pictures at night, and the subject was investigated by our esteemed correspondent, Dr. H. W. Vogel, who published his results in the *Berichte der Deutschen Chemischen Gesellschaft* for 1875. Sell burnt a mixture of nitric oxide and carbon disulphide vapor in a lamp specially constructed for the purpose, and it was this lamp that Dr. Vogel submitted to experiment. As a result, he found that the light produced had a decided chemical activity, but was not as strong as average daylight. To produce a negative by the nitric oxide lamp it took quadruple the amount of time needed in daylight on a clear winter's day at noon. The light was also found to be rich in violet and blue rays, which latter rays gives it an advantage over other light sources for portrait work, as the color blends with the blue color of the eyes. But it was also found necessary to have a specially arranged flue or chimney to carry off the products of combustion, which consist largely of sulphurous oxide gas.

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From what has been said above, it can be seen that there are some advantages in this source of light for photographic work ; but the disadvantages greatly outnumber them.

In the first place the nitric oxide is most easily made by acting on copper with nitric acid, but made in this way, it requires a specially constructed apparatus, and its quality is very variable, since it contains more or less nitrous oxide. Again, the use of chemical apparatus and nitric acid for the production of light in a photographic studio is to our minds entirely out of the question. We have not heard of any attempts being made to store the gas either in cylinders or otherwise, for it is a powerful oxidizing agent and corrodes metal very readily. Nitric oxide gas coming into contact with the air, unites at once with the oxygen of the latter, forming nitrogen tetroxide, a red gas, very corrosive upon the mucous membranes of the throat and lungs, and highly dangerous.

We have, on several occasions, suffered severely from inhaling this gas, and we have seen several hemorhages produced in others, caused by carelessly inhaling the red fumes produced by the oxidation of nitric oxide in the air. This fact alone appears enough, in our minds, to prevent the use of the nitric oxide and carbon disulphide light under ordinary circumstances. The carbon disulphide, also, is by no means an agreeable fluid to have around. Its bad odor, unless specially purified, is a great bar to its use, and a fluid that is constantly giving off sulphuretted vapors is a bad addition to any photographic studio or laboratory.

But why should we look to this nitric oxide mixture for a light for our studios at night? Magnesium alone, or mixed with nitrate of potassium or permanganate of potassium, is all that can be desired, and gives results, with careful manipulation, that it is often hard to realize were not made with daylight. The complications of making the nitric oxide, the dangerous red fumes it forms with air, the sulphurous products of the combustion of the nitric oxide and carbon disulphide, are too many drawbacks to the general use of nitric oxide light, and we strongly recommend our readers not to waste their time on it.

EDITORIAL NOTES.

One of the best things we have heard of lately is the establishment of a library of the Graphic Arts at Florence Hall, Second avenue and 1st street, in New York City. This has been done under the auspices of the editors of the *Lithographer and Printer*, and bids fair to become a most valuable reference library of the periodical literature of the graphic arts in all languages. We have added our mite to the progress of the good work and wish it every success.

We call special attention to a letter from Mr. B. J. Falk, the New York photographer, upon "Photographic Copyright," which appears on another page. We cannot too strongly advocate some action in the direction which he proposes. All of our readers who are interested in this subject should write Mr. Falk, giving their opinions, and he will supply them with printed slips for them to sign. It will only cost the postage stamp to you, and will enable him to do a great benefit to the fraternity at large. Write to him at once.

Our good friend Mr. Horace W. Gridley has been gaining some new and valuable laurels in the East. He has succeeded in photographing Palmyra "the city of the desart," founded by King Soloman, and these are the first pictures of the place ever brought to notice either here or in Europe. Speaking of them, the *British Journal of Photography* says: "Photographically these pictures are marvels, because in a locality where the sun's rays are fiercely overpowering, Mr. Gridley has managed to get out not only sharp details, but soft shadows." The London *Times* in reviewing the exhibition of the Photographic Society of Great Britain says: "Of all pictures shown, those which will attract most notice are certainly the photographs of Palmyra taken by Mr. Horace Gridley. These are believed to be the only photographs in existence of the wonderful ruins of Zenobia's City, previous endeavour to photograph them, made in the old wet-plate days, having failed. This gives especial value and interest to the pictures, which are also of the highest photographic merit. It naturally generally happens that travelers who have opportunities of photographing out-of-the-way places are not skilled photographers, but these views would take a first prize simply as photographs, apart from their intrinsic value." Mr. Gridley is one of the best amateur photographers of the United States, and his pictures are not unknown to the readers of the BULLETIN.

THE Newark Camera Club recently had a very delightful outing in their visit to the Highlands of the Navesink, New Jersey. Among those present we note Messrs. Halsey, Hoyt and Rache, with Mr. G. J. Smith, of Burlington, Vt. The day proved to be a delightful one, and over sixty negatives were secured. This young organization is growing rapidly, and gives promise of some good work in the near future.

THE annual election of officers for the Cleveland Camera Club resulted as follows: *President*, Rev. C. S. POMEROY, D.D.; *Vice-President*, MONTAGUE ROGERS; *Recording Secretary*, CHARLES H. POTTER; *Corresponding Secretary*, Dr. R. DAYTON, 5 Euclid avenue; *Treasurer*, CHARLES E. COLE; *Directors*, W. N. GATES and T. J. DORN. The club has been to a certain extent reorganized, having adopted a new Constitution and By-laws, and enters into the next year's work with renewed vigor and zeal.

WE owe an apology to Mr. Conly, of Boston, for not having acknowledged his kindness in permitting us to use his negative in making the bromide print in the "International Annual," which has elicited so much praise from all quarters, as well for the excellence of the lighting and posing as for the beauty of the print.

WE are indebted to Mr. W. A. Morse, the energetic secretary of the Chicago Lantern Slide Club, for a copy of the unique and pretty little programme of their recent exhibition. The subject selected for illustration was "The Land of Burns and Scott," and consisted of the exhibition of a series of lantern slides of Scotland, with interludes and accompaniments of music and reading. The whole affair must have been particularly interesting, and we hope something similar will be tried further East.

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All communications for the columns of the BULLETIN *should reach us on Monday preceding the day of issue, to insure their publication at that time.*

[*From the British Journal of Photography.*]

PROFESSOR DEWAR ON LIGHT AND ITS ACTION.

(*Continued.*)

A beautiful red light was produced by Professor Dewar by means of chloride of lithium in the flame of a Bunsen burner, and he said that the particular red rays given out by a lithium flame are just those which are absorbed with most avidity by the chlorophyl in the leaves of plants. Chlorophyl cuts off the violet rays of the spectrum, and has a remarkable absorption band in the low red; a bottle of solution of chlorophyl reflects red, and recent discoveries have proved that the maximum effect on vegetation comes from the low red rays, not as Draper thought, from the yellow. He added that in 1864, in a lecture at the Royal Institution, Helmholz stated that comparing the production of carbon by an area of cultivated land with whole energy of sunlight expended during its growth, he calculated that about the fifteen-hundredth part is conserved in an available form, and may be obtained from its combustion. This estimate is, strictly speaking, the mean agricultural efficiency of a given area of land cultivated as forest; and considering that active growth only takes place during five months in the year, we may safely adopt the six-hundredth part of the total energy of sunlight as a fair value of the conserved power on a given area of the earth's surface in this latitude during the course of the summer. Professor Dewar calculated that if it were attempted to balance by vegetable growth the one hundred millions of tons now extracted annually by Great Britain from her coal fields, it would be necessary to cultivate twenty times the area of our coal fields for the purpose, and the area would exceed that of the whole of the United Kingdom of Great Britain and Ireland. If the whole of these islands were covered for 20,000 years with forests conserving energy from the sun's rays, the result would equal the conserved solar energy of our coal fields.

De la Hire, in 1690, and Bonnet, in 1754, showed that green plants when immersed in water and exposed to sunlight gave off bubbles of gas; and Ingenhouss, in 1779, showed that green plants convert a considerable portion of the air around them into carbonic acid when not exposed to light; he also showed that the absorption of carbonic acid by the plant is due to the light and not the heat of the sun. Senebier, who worked at the subject from about 1779 to 1804, discovered that the carbonic acid in the air is decomposed by vegetables under the influence of solar light, and that the red rays cause the production of more oxygen than do the violet; he also observed the different heating powers of the rays of the solar spectrum; he investigated the action of light on the coloring matter of flowers and the coloration of fruits. Boussingault began his experiments in 1840. In 1868 he published that leaves exposed to the sun in pure carbonic acid do not decompose it, whereas rapid decomposition takes place when the acid is diluted with atmospheric air, nitrogen, carbonic oxide, hydrogen, or marsh gas. Leaves become asphyxiated when kept in the dark in gaseous atmospheres free from oxygen, and then have no power of decomposing carbonic acid in the sunlight. Essential oils retard the action of the leaf. The vapor of mercury rapidly kills plants, as discovered by Dutch philosophers in 1797. Boussingault found that the upper surfaces of thick leaves decompose more carbonic acid than the under; in the sun the ratio is as four to one, in the shade as two to one. On an average one square yard of leaf surface, acting during a day of twelve hours, decomposes 306 cubic inches of carbonic acid, or 1¼ gallons, yielding nearly the same volume of oxygen. In 1869 he found that the luminosity of phosphorous could be used as a rapid and delicate test of the absorption of carbonic acid by the leaf; this test enabled him to prove that leaves decompose carbonic acid immediately on exposure to sunlight, and cease their action instantly in darkness; they effect no decomposition before the presence of chlorophyl can be detected. Experiments by Draper, in 1844, supplemented by Sachs and Pfeffer at a later date, proved that only those rays of the sun which are visible to the eye have the power of decomposing carbonic acid, and announced that those which are brightest to the eye, namely, the yellow rays, are alone as efficacious for this particular purpose as all the others put together. Experiments by Timiriazeff prove that the portion of the spectrum for which chlorophyl has a specially selective absorption is most efficient in the decomposition of carbonic acid. Sachs has recently discovered that the ultra-violet rays of the sun are necessary for the production of flowers; when all the ultra-violet rays are arrested by a solution of sulphate of quinine, flowering will not take place under the influence of the remainder of the light transmitted, or at most but one meager flower has been so obtained in the experiments not long since concluded.

Many of the points stated in the last paragraph Professor Dewar demonstrated by experiment. His method of stopping the transpiration of one side of a leaf to see what work was performed by the other side, was to coat it with collodion. He said that it might be asked why leaves did so much work with so small a proportion of carbonic acid as that in the atmosphere. The question was not easy to answer, but it was a fact that sometimes chemical actions would go on best at low pressure; he illustrated this by taking a flask coated inside with phosphorus, and this was not luminous at the ordinary pressure of the atmosphere; when, however, he reduced the pressure inside the flask by means of a few strokes of the air-pump, the phosphorescent coating began to glow in the dark. The amount of carbonic acid given off by animals and fires is not sufficient to sustain the vegetation of the world; most of the necessary carbonic acid comes from sea water, the bicarbonates in which give off one portion of their carbonic acid very freely. Thus the balance is preserved.

He proved that seeds give out feeble heat when germinating by means of some peas which were soaking in water; by the aid of a very delicate thermopile it was demonstrated that the temperature of the water was slightly higher than that of the surrounding air. He exhibited some mustard and cress which he had been growing in darkness; they had grown to greater dimensions than if they had been exposed to light, but they were yellow all over. No chlorophyl had been formed, and the growth had all taken place at the expense of the seed: it was a case of vegetables living upon their own vitals, so to speak.

Among substances which transmit the photographic ultra-violet rays of the spectrum, and to which glass is opaque, are rock salt, quartz, extremely thin films of silver, iodine vapor, water, chrome alum, and permanganate of potash. Of these the silver film, chrome alum, iodine vapor, and solution of permanganate of potash in sufficient thickness, cut off the visible rays.

In a true or diffraction spectrum there is much green; in an ordinary spectrum there is little green, the rays at that end being so little spread out in proportion to the blue end. The following is the result of experiments as to the relative intensity of red and green rays from incandescent platinum.

LIGHT RADIATION OF PLATINUM.

Temperature, deg. C.	Luminous intensity. Red rays.	Luminous intensity. Green rays.
954	1.00	1.00
1045	3.27	3.64
1500	154.00	219.00
1775	507.00	809.00

Thus highly incandescent platinum is relatively rich in green rays.

The following are results of experiments as to the amount of luminosity given by the whole of the sky, as compared with the luminosity of the sun at the same zenith distance.

Place.	Sun.	Sky.	Ratio.
Manchester	43	140	0.31
Kew	150	162	0.93
Heidelberg	263	174	1.51
Para	163	136	1.00
Paris	222	501	0.44

Professor Dewar stated that the average height of clouds is: Cirrus, 4½ miles; cirro-cumulus, 4 miles; alto-cumulus, 2½ miles; false cirrus, 2 miles; cumulus, 1 mile.

The Professor gave the following figures as to the intensity of solar radiation as measured by a thermometer, and assuming a perfectly thermo-homogenous atmosphere; the absorbing medium was a perfectly black body.

Zenith distance.	Thickness of atmosphere.	Intensity of radiation (Air dry
0	1000	2.403
10	1016	2.401
20	1065	2.395
30	1155	2.383
40	1305	2.364
50	1555	2.331
60	2000	2.275
70	2930	2.164
80	5700	1.868
90	35000	0.359

He also gave the following as the most accurate measurements yet made in relation to the wave lengths and velocity of vibration of waves of light of different colors. The letters in the first column are those of the fixed lines of the spectrum.

VISIBLE SPECTRUM.

	Wave lengths (Centimeters)	Vibrations per second.
A	7.604 × 10^{5}	3.950 × 10^{14}
B	6.867 "	4.373 "
C	6.562 "	4.577 "
D_2	5.895 "	5.097 "
D_1	5.880 "	
E	5.269 "	5.700 "
b_1	5.183 "	
F	4.860 "	6.179 "
G	4.307 "	6.973 "
h	4.101 "	
H_1	3.968 "	7.569 "
H_2	3.933 "	7.636 "

He stated that the first effect of the influence of light upon a chemical substance is to produce a result which it afterwards reverses, and this is seen in the case of gum guiacum, which turns blue when long enough subjected to the influence of light, but which by further action is bleached. Often in phosphorescent bodies the same inversion of the effect is seen. Similar effects are produced upon guiacum by ozone; at first ozone turns the gum blue, but afterwards bleaches it, for ozone will bleach anything.

Plants will not grow in a light filtered through a solution of chlorophyl; there is also a temperature at which the chlorophyl in living plants will not function under the action of sunlight. Something apparently of the same kind may take place with inorganic substances. He took a plate covered with luminous phosphide of calcium paint, and cooled it to eighty degrees below the zero of the centigrade scale by means of water containing solid carbonic acid; it then ceased to shine in the dark, and could be kept from shining so long as the low temperature was maintained, but upon removing it from the bath and breathing upon it, it glowed again. He had "locked up light" in this way for three weeks. He did not know the cause of the phenomenon, so would not attempt to give any explanation.

In some additional experiments he proved that chloride of gold is sensitive to the action of light because of the starch and other organic reducing substances in the paper. He also developed with ammonia a mercurial latent image, consisting of calomel, but did not state how he prepared the paper. Perhaps with bichloride of mercury. The developed image was brown.

In the course of experiments upon the capacity of glass to radiations from luminous sources, he proved that the thinnest microscopic glass cuts off twenty-five per cent. of the radiations from a Bunsen's flame; four plates of the same glass cut off but fifty per cent., most of those rays which do not readily pass through glass being stopped in the first instance. When a cube containing boiling water was substituted for the flame, a single piece of microscopic glass cut off seventy-five per cent. of the radiations. The measurements were made by means of a thermo-pile and a galvanometer. When the radiations from the electric arc were taken, a piece of transparent glass cut off from ten to fifteen per cent. of the total emission, and deep red glass cut off but little more, proving how very transparent red is to some of the radiations from luminous sources which are not visible to the eye. Blue glass, however, cut off fifty per cent. of the total radiation. The radiation in this case, he said, is partly from a gaseous and partly from a solid source. He accordingly arranged the slit in the diaphragm of the electric lantern so that it would permit only the rays from the incandescent gas between the carbons to pass; the radiation from the gas was then proved to amount to but ten per cent. of that of the electric light as a whole. There is more heat than light in the electric arc radiation, the relative values of heat and light in which, as compared with the radiation from the sun are here given.

	Light.	Heat.	Total radiation.
Sun	25	75	100
Electric arc	10	90	100

If we suppose the surface of the earth in this latitude to be black, and that the sun acts vertically, then a layer of water, half an inch deep, covering the surface, would be raised in temperature one degree centigrade after one minute's exposure. A parabolic mirror a yard in diameter, exposed perpendicularly to the sun's rays, will concentrate at its focus as much radiant energy as is evolved by an ordinary fifty-cell Groves' battery. Although glass is so opaque to certain radiations from luminous sources, plates of rock salt let them pass freely; bad absorbers are bad radiators, hence when rock salt gets very hot it takes a long time to cool.

Professor Dewar exhibited a curious way of getting a low steady light from platinum. He poured an ounce or two of strong liquid ammonia into a large globular flask, then suspended over the liquid a spiral of platinum wire, which had first been made red hot. In the flask it continued to glow steadily because of the heat generated, without flame, by the slow combustion of ammoniacal gas. Would this do for a developing room lamp?

Professor Dewar then spoke of bacteria used as the basis of a photometer. He said that Engelman uses bacteria as reagents for discovering the assimilative power of the plant cell, containing chlorophyl for carbon, when stimulated by divergent rays of the solar spectrum. The method depends upon the fact that certain bacteria only exhibit movements in the presence of free oxygen. If such organisms are examined under the microscope, only those next the edge of the cover glass show any motion. They further all tend to collect where they can get free oxygen. If a cell containing chlorophyl, such as a small alga, be placed under the cover glass along with the bacteria, then they instantly collect round it, provided the illumination is sufficiently intense to cause the evolution of oxygen by the chlorophyl. When such observations are make in a pure spectrum, it is found that the bacteria collect especially at the part of the spectrum between the solar lines *B* and *C* (junction of the orange and green), and to a smaller extent in the blue just beyond the line *F*. These positions in the spectrum coincide with the marked absorption bands of the chlorophyl spectrum, and this coincidence would seem to indicate that those rays which correspond to maximum absorption are most efficient in the decomposition of carbonic acid, or, what is the same thing, most active in producing free oxygen from the same gas.

Engelman has shown that some kind of coloring matter is absolutely necessary in order to bring about this light decomposition by the plant cell. It is possible by Engelman's method to estimate quantitatively the relative activity of the different rays of the spectrum with regard to the decomposition of carbonic acid by observing the width of the slit needed in each successive region of the spectrum to stimulate the bacteria into movement in the immediate vicinity of the alga. The curve showing the relation between the wave length of light and the intensity of carbon assimilation, or production of free oxygen from carbonic acid, follows very closely the form of the curve found by Lamansky and Langley, by the agency of the thermo-pile and the bolometer for the distribution of radiant energy in the solar spectrum.

The quantitative relation which exists between the amount of absorption and assimilation is relatively a simple fraction, and may be stated as follows: The ratio of the amount of luminous energy which has disappeared as such, to the chemical potential energy produced, is for each wave length and all chlorophyls the same, and equal the one to the other.

[*Transactions of Edinburgh Photographic Society.*]

SOME NOTES ON THE NATURE OF THE LATENT IMAGE.

BY T. W. DRINKWATER, PH.D., F.C.S.

OUR knowledge in many things concerning photography is hidden, and we might, with some justice, apply the term "latent" to other phenomena besides the hidden image.

I don't think that, as a body, we disobey the great command regarding the worship of graven images, but we all, I am sure, feel some interest in the so-called latent one, and would be pleased to know a little more about its nature, and the conditions under which it is produced. The interest centred in this subject is shown by the numerous speculations as to its nature which have from time to time been made, and the numerous theories which have been put forward as to the cause of its formation, but at present I fancy they only exist as theories. What we want is proof. I do not know that I can do more than theorize to-night, but I have been experimenting—not always with success—but still I think my results warrant me in putting forward one other theory regarding the nature of this photographic puzzle.

In Captain Abney's book on photography he opens with an ingenious theory regarding the latent image, and ascribes a purely mechanical cause for its origin. His theory is, that light waves of certain length set up oscillations in the molecules of solid matter forming the sensitive medium, and that there is a certain amount of synchronism in the oscillations of the wave lengths, and the matter on which they act. This theory is ingenious, but somewhat vague, and it altogether fails to account for the various phenomena of development; indeed, Abney sees this himself, for he takes it for granted that these oscillations produce a change in the silver salts exposed to light, which become reduced to sub-salts (so-called), which sub-salts, by the action of the developer, are still further reduced to the metallic state. In the remaining portion of the book, development is always explained on the assumption that the latent image has been produced by a chemical change. Now this theory regarding the chemical change is a very generally accepted one, though I have never yet met with anybody who proved it, nor have I ever seen any mention of such proof in any of the numerous publications devoted to the art-science. You are all well aware of the supposed, and, I might add, accepted, nature of this change. The chloride, bromide, and iodide of silver are said to be reduced to sub-salts, giving off during the process free chlorine, bromine, or iodine, according to the nature of the plate or film.

Now, to my mind, there are several arguments against such a phenomenon being possible. In the first place I have calculated that in a whole plate of average quality there are about two grains of combined bromine. Now, if this chemical theory be correct, on exposing a plate half of this bromine should be set free. Now, has any one ever detected the slightest trace of bromine or any other halogen in his camera after removing a dark slide? Neither bromine, iodine, or chlorine are substances that could escape notice, for, besides their well-marked color, they have an odor, and an odor that there is no disguising. Again, I do not think that any one with any respect for his camera would care to expose it to the tender mercies of a free halogen. The brass work, leather work, screws, etc., would soon resent such treatment. Another proof, equally strong to my mind, against this chemical theory is, that the so-called sub-salts of silver—I mean, of course, the halogen sub-salts—are insoluble in hypo. Now, if any one exposes a plate, and then fixes it without developing, it fixes to clear glass. This is a fact, I am sure, known to all of you, and to photographers generally, and yet you will hear every one talking of the latent image as consisting of sub-salts of silver, and explaining all the phenomena of development by the action of the developer on these imaginary compounds. Do not misunderstand me; I do not say these sub-salts do not exist. I am aware they do. In fact I have prepared them myself, to aid me in my experiments; but what I firmly believe, and what I wish to prove to you is, that they do not exist on an exposed photographic plate. I will even go a little further and say that practically the sub-salts are produced by the action of light, and are present at a certain stage in a silver print. You see I draw a distinction between the action which produces a silver print and one which produces, or in part produces, a glass negative. Again, all these sub-salts are colored more or less of a violet color. Has any one ever seen anything like an approach to color in an exposed plate before it has been developed?

Somewhat recently this chemical theory has been more fully worked out by Professor Carey Lea, and he has given us the results of an elaborate series of experiments conducted with all the care and forethought which we should expect from such a distinguished chemist. He has prepared a set of silver salts which he calls photo-salts. His paper you have all read, I am sure, and I need only refer to it generally. These photo-salts have no imaginary existence, they have been produced and examined, and to a certain extent explain the varied phenomena of development; in fact, Carey Lea's theory fits in beautifully with our general practical experiences, and explains on the first blush all the mysteries of the latent image, but its weak point—for it has a weak point, and a very weak point—to my mind is, that he has never yet proved the existence of any photo-salt on an exposed plate, nor do I think it possible that he can do so. The series of photo-salts are interesting in themselves, and in some future development of photographic science they may be of value, but at present there is nothing to show that they are produced in an exposed plate, or that they even play any part in the production of a latent image. The fact of the matter is, gentlemen, that we know practically nothing about the matter. Our knowledge concerning the changes which take place in a plate during exposure is as hidden as the image itself. In discussing photographic matters we always talk about the sub-salts, etc., as if there were no doubt of their production, and back up our ignorance knowingly, but unthinkingly, with, to speak plainly, a scientific fib. Since I have been interested in the matter I have had conversations with several photographers who are really interested in their work, and the general opinion is that the sub-salt theory is good enough for practical purposes. It explains all the difficulties very nicely, and even if it is not an exact truth, it does not matter. Scientists may wish to know the nature of the latent image, but it is doubtful if it would be of any value to practical photography.

Now I differ altogether from this view. If scientists had not interested themselves in photography, and searched into the causes of all the marvellous changes which photographic science is capable of producing, where, I ask, would photographic art be at the present day? If we wish to advance photography, if we wish to improve our methods of manipulation, we must surely gain, in the first place, some knowledge of the cause of the various effects brought under our notice. So if we wish to understand thoroughly, and to have under more perfect control the varied mysteries of exposure and development, we must have some more definite knowledge than we at present possess of the nature of the latent image.

As the outcome of my experiments, I have formed a theory which may, or may not, be a correct one, but which I am going to give to you, asking your help to either break it down or build it up. I want the subject fairly argued out; I want my weak points assailed, as I assailed others. I don't say my theory is the correct one, and that all others are wrong. Mine may be even weaker than any that have gone before, but I will admit that I think it is as plausible. My experiments are far from complete. I am still engaged with the subject, and intend next session to again bore you with a second instalment anent the subject. If any of you can give me suggestions as to experiments I shall be obliged. As I have gone along I have found one experiment suggest another, and the work has not been accomplished so readily as I at first imagined it would be. Broadly speaking, I account for the productions of the latent image by electrical action, and now for my proof.

Some months ago a paper was read at the Chemical Society of London on the electrical phenomena which took place on mixed pyrogallol and caustic potash solutions, and this immediately struck me as having some bearing on photography, seeing that this mixture could be used as a developer. If development were electrical and not chemical, then the change produced by light, which gave us something to develop, might be electrical also. My first experiments were treating the various developers in such a way as to ascertain whether similar phenomena were produced. Without detailing all my experiments, I may say that pyro with ammonia, carbonate of potash, and carbonate of soda, all give, in mixing, current electricity. I get most effect with potash, least with ammonia. Mixing oxalate of potash and sulphate of iron also gave me a similar result. Here, then, I proved to my satisfaction that electricity was produced during development. Of course here I met with weak point number one. Although electricity is produced during development, is it the cause, or is it merely a by-effect? For you must remember that electricity is the result of all chemical reactions. I next tried to prove that electricity is produced at the moment of exposure, and here my experiments have only been partially successful. I placed unexposed plates in connection with instruments to detect electrical currents, and then burnt a piece of magnesium wire in front of the plate, and observed whether any indication was given. On a few occasions I have been successful in obtaining evidence of electricity, but in the majority of instances I admit I have failed. I may add this much, however, I succeeded best with a paper film (an Eastman).

In dealing with delicate instruments for electrical measurement, so many outside influences affect them that at present I am not altogether in a position to affirm that my electrical currents were produced by light action ; I believe they were, but until I carry out a few more experiments (and I think I have a new clew now) I must let it rest merely as a belief. As a further proof that my belief will ultimately become a certainty, I will remind you of an experiment, now nearly fifty years old, which Becquerel, the physicist, performed. He coated two plates of silver with chloride of silver in the dark ; these were placed in a vessel of water, and light allowed to fall on one of them. A current of electricity was set up, the exposed plate acting as the negative pole. This is an experiment which can be easily tried. I have repeated it with bromide and iodide, and found a greater effect with iodide and bromide than with chloride ; in fact, the deflection of the galvanometer needle was in the order named—viz., iodide most, chloride least, and bromide intermediate. This order, I may mention, is in the opposite order to their chemical activity.

Light is not needed to form a latent image ; it is capable of being produced to a somewhat limited extent by heat. I saw some months since a query in one of the journals concerning dark lines across the lower end of the plate, and it was answered by some one having a similar experience, that it was caused by the leather hinge of the slide absorbing heat and radiating it on the plate. I therefore set to work again, and found that by placing over a plate alternate white and black strips I could get a latent image by merely holding a hot iron for some seconds over the plate. Where the black strips were placed, deposition took place during development ; where white strips, the glass developed clear. How can this be accounted for on the assumption that the latent image consists of sub-salts ? Surely no one will argue that sub-salts are produced by heat ?

One more point, and I am done. The subject may not be so interesting to you as it is to me. I may tire you if I continue much longer. In developing Warnerke's old positive paper (modern bromide paper does not show it so well), if you rubbed the paper with the cleanest of fingers in the developer, or if you rubbed a small piece of unexposed tissue with clean rubber, the developer always developed the mark, and a black stain resulted. How could friction produce either a sub-salt or a photo-salt ? Friction does produce electricity.

To sum up, then, I believe an exposed plate to be in an electrified condition, each molecule being in opposite electrical conditions, and that under the electric action of the developer—unlikes attracting each other, likes repelling—the metallic silver is built up to form the visible image. The exact details of all these actions I leave for another paper. I must ask for time to complete my experiments, and before next session comes round I hope to be able to perform them before you.

This is our last meeting before the recess, and I was anxious to bring up the subject before we separated, so as to gauge your opinions on my theory, and to enlist your assistance with suggestions. I think the theory is new. I have read up the literature of the subject as far as I could, and I can find no mention of electricity having anything to do with photography—at least as far as latent images are concerned. In the words of the learned counsel : That's my case, gentlemen, pitch into me, and pick it to pieces, I shall not mind. I want to arrive at the truth, with your assistance; and if you break down my theory to-night I shall simply go on experimenting, and when I have prepared fresh proofs will bring the subject again before you.

SUCCESS IN PHOTOGRAPHY WITH THE FLASH-LIGHT.

BY JOHN BARTLETT.

[Read before the Photographic Society of Philadelphia.]

It is almost an article of scientific faith with many photographers, that the light which operates in producing the chemical changes by which photography is made possible, is something completely independent of the ordinary light. which produces impressions upon the retina, resulting in vision.

A peculiar force called actinism is said to operate in a mysterious way upon the particles of sensitive bodies,—a distinct principle resident in the sunbeam, associated with light and heat, yet distinct and separate.

Now, the truth is, as recent investigations have shown, and as Becquerel maintained nearly a half century ago, in opposition to the views of Draper and others; the radiations from any source of light, extending from the extreme violet to the extreme red of the spectrum, differ only in the rate and magnitude of the vibrations which are at work. The luminous, the heat and the chemical or actinic rays, are merely modes of the same force, which is nothing more than a system of vibrations.

The difference between the light at one end of the spectrum and the other is analagous to the difference between notes of high and low pitch in music. If, for instance, we should accelerate the vibrations which at any time are manifest to us as red light. we would have the effect of violet; or if the violet should be retarded, we would have the phenomenon of heat-giving rays predominant. In light as in sound, there is a system of regular disturbances of a medium, which produces long and short, slow moving and quick moving waves.

Photography is merely a means for securing a permanent record of these disturbances. The salts of silver are so constituted that the action of the short waves, the very rapid violet undulations. is necessary to start the molecules into a shudder or tremor. The condition of equilibrium of the silver molecules is such that a response is given at once to the impact. a resistance is offered, just as the sea waves meet resistance with the shore. The direction and velocity of the waves are affected; the molecules rearrange themselves to a new condition of equilibrium; the greater number taking up and propagating the violet wave motion, while the others file off in the line of the longer waves.

The sun is not the only source of radiation which produces chemical effect. Any substance which, when subjected to the action of intense heat, resists all tendency to conversion into vapor or gas, still remaining in a solid condition, gives, when the radiations from it are passed through a prism, a continuous spectrum similar to the sun's spectrum.

There are several bodies which resist the vapor-converting action of the highest degree of heat, and give, like the sun, uninterrupted spectra.

The carbon points of the electric light arc yield a pure, white light, which presents a continuous spectrum from red to violet; so do incandescent magnesia, lime and other bodies.

But the various groups of color in these spectra are not always distributed in exactly the same proportion as in the sun's spectrum. In some the yellow and red will predominate, in others the blue. Now, as the salts of silver are influenced chiefly by the blue rays, it follows that any incandescent solid, rich in such rays, is especially valuable in photograpy, although its heat-giving and light-giving rays may be less extended than in the sun's spectrum.

Magnesium, when supplied with oxygen, is converted into magnesium oxide or magnesia, which is practically infusible at any temperature we can reach.

It therefore gives a continuous spectrum, and although its light-giving qualities are inferior to the luminosity of electric light, it is far richer in actinic rays; we use the word with caution. The light from burning magnesium, or rather incandescent magnesia, is not so intense as sunlight or electric light; a great advantage in securing soft, harmonious photographs. Bunsen and Roscoe estimated the light of the sun, as compared with incandescent magnesia, to be five hundred times as great; while the sun's actinic intensity is only thirty-six times as great.

To secure the full photographic value of the magnesium flash-light, certain conditions are necessary. Metallic magnesium, in foil or ribbon, readily takes fire and burns at the expense of the oxygen in ordinary air; but the combustion is much slower, and the magnesium-oxide is less incandescent than when the metal is finely powdered, and projected into a flame. When burned in oxygen the incandescence is greatly augmented. Now, any body which supplies an abundant stock of oxygen to the metal in a prompt delivery, causes a large quantity to be ignited in a short time, thereby increasing the amount of energy, and, consequently, the incandescence. It is necessary, therefore, that the energy should not be dissipated but concentrated, so the flash may be of the shortest possible duration.

Our experiments with the powdered magnesium were begun immediately after the publication of the results of Gädeke Miethe, of Germany, to whom belongs the honor of having first shown the great possibilities of the new magnesium light. An account of the various methods employed, and the results we obtained in our endeavors to secure othochromatic effects, would form an interesting talk.

Our first trials were made according to the suggestions of Dr. Piffard, of New York, by sprinkling the powdered magnesium upon gun cotton; but the combustion was not prompt enough, and our sitters were taken with closed eyes. The magnesium was not properly consumed, and much was wasted. The use of gun cotton suggested collodion; we accordingly mixed powdered magnesium with chlorate of potassa, and then stirred the mixture in plain collodion until the ether and alcohol evaporated; the result was an intimate mixture of a granular character, the chlorate and the magnesia being really enclosed in little coats of the collodion. The spontaneity of the powder was much increased, and its strength also augmented.

We also tried various mixtures for increasing the energy of the powder,—picric acid, bi-chromates, nitrates, chlorates, etc., etc., but we very soon abandoned them all on account of the highly dangerous and poisonous character of the combinations. We endeavored to find a compound which, while simple in composition, should yield the greatest amount of energy when ignited. A happy accident suggested the employment of a substance which fortunately was non-poisonous in nature, while extremely energetic in its action when combined with magnesium.

We found that we could entirely dispense with chlorate of potassa, picric acid, and the other dangerous chemicals which had hitherto been employed; the resultant combination ignited with more spontaneity than any other compound we had made, and was not explosive by ordinary percussion, even when subjected to considerable friction. The powder was christened Blitz-pulver, in honor of its rebirth in Germany, the baptism being a baptism of fire. We think we can safely say that no other form of magnesium flash-light has yielded such excellent results. The views which we shall exhibit this evening were made by igniting moderate charges of the powder.

A few words as to the best means of using the light may be of interest. We generally employ the unscreened light, although certain subjects might require a diffusion of the rays by means of a gauze or ground glass; in such cases we would increase the amount of powder used. As a general rule, the point of ignition of the powder should be at a height of five feet or more, in order to cast the shadows low; but sometimes these shadows may be very effectively introduced,—that is, artistically speaking. The shadows may also be prevented by placing the sitter at some distance from the background, and raising the position of the light to six or seven feet from the floor.

For portraiture, the light should strike the face at about an angle of thirty or thirty-five degrees to a line drawn from the camera to the sitter. The light, if possible, should be placed slightly behind the camera, but if it is necessary to approach nearer the sitter, the lens should be shielded. The room in which the exposures are to be made, if figures are introduced, should be well illuminated with gas or lamp light, the object of which is to secure good expression in the eyes. As is well known, the pupil of the eye contracts under the stimulus of strong light, and expands in weak light. In total darkness, doubtless, it is widely expanded. Now, as the nervous response of the pupil to stimulus is less rapid than the duration of the light, it will be seen that if a photograph is taken in total darkness, the registering of the appearance will be made before the nerve has time to carry the impression over the double track from without to the brain, and back to the eye. A photograph in which the eyes are represented with widely-expanded pupils gives the sitter an owl-like expression; but when just enough light is in the room, to expand the pupils a little above the normal, the expression is most beautiful and brilliant. This the gas light does, and the flash-light registers the expression.

In taking groups, be careful that the shadows of those in front do not fall upon the faces of those behind. The lighting for groups should be higher than for a single figure, and, perhaps, more directly in front.

In our first experiments we made use of silvered reflectors, but soon found that the light radiated was too strong for the shadowed face. If the paper in the room is light colored, no reflectors are needed. If the paper is dark, reflectors of newspaper are sufficient to illuminate the side of the face turned from the source of light. The reflectors should be large, and placed at some distance, say, three feet, from the face. Focussing is best done by holding a candle in front of a newspaper placed in a line with the sitter's face. When the type can be seen distinctly on the ground glass, put in the stop and the picture will be sharp.

Few directions need be given for taking interiors. The lights can be left burning, and form part of the scene; they will not produce any flare upon the plate, provided the cap is not taken off until the instant before the powder is ignited. Interiors can also be taken in daylight, and the camera pointed directly at the windows opening upon the street. The mullions appear distinct and well-defined; and there is not a trace of halation.

The use of Blitz-pulver light for interior work not only saves a great deal of trouble and time, but, what is above all most desirable, allows the members of the family to occupy places in the picture, giving a more home-like appearance to the scene. From the absence of life in interior views there is always an impression conveyed of dreariness and desertion. The rapidity of the flash removes all constraint from the participants, and gives a naturalness to the scene which is delightful.

In taking interiors, care should be observed that the light is not reflected into the lens from mirrors, etc.,—the result, of course, would be fog. In photographing still life, groups, flowers, fruit, etc., the flash-light can be successfully used; the reflections from the polished surfaces are most beautifully rendered, and the whole effect is quite as fine as pictures taken in diffused day-light. Moreover, certain effects can be secured not possible by daylight; as, for instance, the appearance of steam or vapor from a foaming bowl of punch may be imitated by placing a smoking taper in the bottom of the bowl. The smoke will be caught in the quick flash, and will have all the look of steam, especially if some dark object behind it gives relief.

One of the most important applications of the flash-light is the photographing of animals. It is possible by its means to take animals at their homes,—the dog or cat upon the hearth forming part of the domestic circle, giving additional interest to the scene.

The flash-light has recently been employed in scientific investigations.

DuBois Raymond, taking advantage of the great expansion of the pupil in total darkness, and its inability to contract instantaneously, has used with great success the flash-light in getting photographs of the interior of the human eye.

Mr. Julius Sachse, of this city, has actually succeeded in photographing the visible growth of the rapid-flowering, night-blooming cereus.

The series of pictures taken at short intervals, in some cases, not more than five seconds apart, show the peculiar spiral motion accompanying the evolution of the flower from the bud. The actual tremor of the flower in its eagerness for development is shown in a wonderful manner.

We refrain from speaking further of this novel application of the flash-light to this most interesting biological study, inasmuch as Mr. Sachse has not yet completed his investigations. He hopes shortly to continue the study, and promises to give us the benefit of his labors.

The Blitz-pulver light might also be used in studying the process, segmentation in the ova of the toredo and other low forms of animal life in which the peliciles covering the eggs are transparent.

Our fellow member, Professor Zeckwehr, has very ingeniously used the Blitz-light to demonstrate the truth of his views concerning certain musical movements.

Messrs. Rau, Harding and Davis, of the Philadelphia Society, have succeeded in making some interesting pictures of the interior of a coal mine, in which the structure of the vein is shown with a perfection never before accomplished.

In conclusion, a word about development of flash-exposures may be needed. We prefer to keep down, in developing, the amount of pyro to the minimum, because we like soft pictures. The pyro must be diminished, especially if there is white drapery in the photograph, or hardness and violent contrast will be the result.

We employ a weak developer, that is, one with considerable water, but with the alkali in slight excess. For instance:

Pyro	1 dram.
Alkali	2 drams.
Water	6 ounces.

If we find the plate slowly building up in density, we refrain from adding any more pyro; but if, after a reasonable time, it is tardy in gaining strength, we cautiously increase the amount of pyro. After detail is secured, then labor for density, but not before. A developer with excess of alkali softens the high lights, and gives the shadows and half tones a chance; but just here judgment is necessary. The amount of alkali should not be such as to flatten the high lights: there ought to be a small area of brilliant white light in every picture which lays claim to artistic qualities.

REDUCING CVER-PRINTED BLUE PRINTS.

BY JOSEPH P. BEACH.

[Read before the Society of Amateur Photographers of New York.]

A PHOTOGRAPHIC negative, having been placed in frame, under a piece of blue paper, inadvertently remained a long time exposed to sunlight, while the person in charge attended to other matters.

The picture was scarcely discernible even after the print had been placed for a long time in several changes of water.

This print was made into a very presentable picture by a bleaching-out process, which will probably be found very useful to those in whose business blue prints are serviceable.

The above print (which had, when dried, become almost blue-black in all parts) was laid upon a clean platter (a piece of glass will answer). Water was poured upon it until the paper again became limp and pliable. The water was then drained off, and upon the face of the print was poured a small quantity—a drachm or less—of old pyro and potash (Beach) developer flowing it over all parts of the print as evenly as possible, keeping the fluid moving over the surface of the print until the latter had assumed a violet tone. In this case it was a very dark violet tone. Repeating this with a new dose of "old developer" did not seem to lower the intensity of this dark violet tone, so the print, now of this color, was washed thoroughly on both sides for some moments.

The print was then flowed with a small quantity of saturated solution of oxalic acid. The acid was allowed to run over every part, which immediately assumed a beautiful light green color, changing to blue after washing in several changes of water. The well-washed print, after being dried, had turned out a very presentable object, nearly every detail quite perceptible, and although the whites were still blue in color, they were no longer almost invisible, but quite pronounced.

The texture of the paper in this print had, however, suffered from the prolonged washing probably, or the oxalic acid. Other experiments were made, using acetic acid, vinegar, citric acid, etc., etc.

Subsequently I reduced this process to substantially the following *modus operandi,* which is now employed successfully in a great many instances, even after the prints are mounted, in preference to having collections of prints which offended the eye by too deep a blue color:

The print to be operated upon is first placed in a suitable vessel and soaked with clean water until pliable. The water being drained off—half a drachm, more or less—of old pyro and potash (Beach) developer—enough to thinly cover the print—is next flowed over and kept in motion by rocking it over every part of the print. This will occupy but a few moments, but should be continued until the picture has assumed an even violet line, a dove, or mouse color.

When the eye is satisfied that an even color has been obtained, instead of pouring off the developer (which would leave streaks of color), fill the dish with clean water. This removes the developer uniformly, and then the dish may be emptied.

The print should now be washed in clean water for a minute or two on both sides, and all surplus water drained off.

The next operation is a very beautiful one.

The wet print is quickly flowed with a small quantity of acetic acid; a few drops sometimes is enough. The acid must be moved over every part of the print, which immediately changes the violet or mouse color into a lively green, more or less bright, according to the previous action of the developer. The green color afterwards becomes blue. The acid should not be allowed to remain more than a few seconds on the print, which is then washed thoroughly for a few minutes, and afterwards placed to soak in a dish of clean water. In half an hour, or after several changes of clean water, the print may be dried between blotters, or by hanging up in the usual way.

The entire operation occupies only a few moments, and if a good quality of paper is used the prints are not injured.

After the prints have once been operated upon, they can be repeatedly put through the process, but it is needless to say that every repetition causes the fiber of the paper to rise and rebel against so much disturbance of its tissue. A little practice and deft handling will enable the operator to bleach his prints and turn them out in almost as good a condition as if they had been properly printed in the first instance.

I have experimented in various ways, with different solutions, and give the foregoing as the best result I have found after many trials.

The specimens will show that acetic acid, as a fixing agent, is preferable to anything else that I have used.

ALTERATION IN BLUE PRINTS, OR FOR WRITING UPON BLUE PRINTS.

After many experiments I have found that the ordinary No. 2 solution of potash and soda (Beach's) developer is a good ink with which to write upon blue prints.

This writing must be done with a gold pen, upon the dry print, and suffered to dry. The print is then washed in clean water. It will now be found that an edge of violet color, extending sometimes a quarter inch into the adjacent parts, mars the clearness of the lettering. This is speedily removed, and the writing brought to a clear white, by flowing with a few drops of acetic acid.

For stopping out clouds and other parts of a blue print, a fine sable hair brush, dipped in the solution (No. 2) and brushed over such parts of the blue print which it is desirable to remove, will attain that object. After washing, the rough violet edges are removed by the acetic acid.

Similar results, in a modified form, were obtained by using "old developer" for writing on blue prints. The letters do not become of a clear white, but retain some blue color, not enough, however, to be detrimental.

SUPPLEMENTARY, BY F. C. BEACH.

To reduce a blue print it is only necessary to use some alkali, such as carbonate of soda.

In the cases just mentioned it is the carbonate of potash in the developer which is the active reducing agent.

A solution which will gradually reduce a blue print is composed as follows:

Carbonate of soda	8 grains.
Water	1 ounce.

It may then be treated with the acetic acid, as described, which in a measure restores the brilliancy of the print and neutralizes the effect of the alkali. I have a specimen print reduced in this way, which will be passed around.

In addition to the lamp, which I have had the pleasure of exhibiting to you this evening, I would furthermore call your attention to an article of recent invention (foreign), which supplies a want hitherto unmet, viz., a battery or cell in which no liquid is used—a dry battery with neither acid nor water, complete in itself—a dry battery working in every way equal, to say the least, to the liquid one of similar elements, and lasting likewise as long—for years. It is known as the "Gassner Dry Battery." The usual cell is a cylinder, 3 inches in diameter and 7 inches high. That which I would more especially present to your notice is the petite cell No. 0 (exhibit), capable of being carried in your vest pocket the same (and with like convenience) as you would your watch. This cell instantly rings an ordinary call or signal bell (exhibit). I insert 200 feet of covered annunciator wire (twice the height of an ordinary house). The interposed resistance does not hinder its ringing (exhibit). I have brought with me from my laboratory a standard resistance coil of 100 ohms. On connecting three of these No. 0 cells for intensity, and inserting such resistance coil, you readily see its action upon a galvanometer needle to the extent of ten degrees, and, moreover, the needle is permanently held there on continuation of contact (exhibit). With another galvanometer of different construction, the needle is instantly swung completely around the circle (exhibit).

As all present may not be conversant with the details of telegraphy, I would say that the resistance of this 100-ohm coil is equal to 25,000 feet (about 4⅓ miles) of No. 16 annunciator wire, and that at such distance like effect upon the needle would take place. Its effect upon a magnetic bell when so connected and with a short or house circuit, is violent (exhibit).

With two cells connected for intensity, and a 20-ohm resistance coil introduced, a bell is rung with force. The resistance here is equal to 5,000 feet, nearly a mile, of No. 16 annunciator wire. The value of such a battery in our science is great. An electric instead of a pneumatic release to the shutter is ofttimes desirable, as for instance, when the camera is stationed at a distance from the operator. In my own residence, overlooking the East River and Blackwell's Island, a camera, armed with its dry plate, is ever ready for service in one of the windows of the uppermost floor. From any part of my house, by an electric tap, I am enabled (or, if absent, a member of my family) to operate the shutter with consequent exposure on sail or steamer, or other interesting object passing. For the simultaneous release of several cameras I also use it; nothing, of course, equals it. To enumerate cases of applicability is unnecessary. In public lantern exhibitions the signal bell, so greatly needed, is now ready and conveniently at the operator's or lecturer's disposal. In your galleries a couple (or even one battery), with call bell and wire, at a cost of only from three to five dollars, will enable you to hold communication with any part thereof. The battery is unaffected by either cold (it does not freeze) or heat, the necessary moisture being in chemical combination and not in the fluid form. No deposit on zinc increases the internal resistance, decreasing its power. When not in use there is no action, and there are neither fumes nor uncleanliness from crystallization of salts on its exterior; nor are there again any glass jars to be broken—a hermetically-sealed metallic case, inclosed in a paper box, constitutes the battery.

[*From Photographisches Wochenblatt.*]

DETERMINATION OF THE OBJECTIVE OPENING.

BY F. STOLZE.

In a former number of this journal was published the method of Mr. E. Miethe for the determination of the objective opening. Mr. Miethe contented himself in making known a process for double-objectives, and specially for that particular case, where the light falls parallel upon the same. I shall now show that the condition changes entirely, when the taking of nearer points comes into question, and also, that with single lenses with front diaphragms, for the same reason that diaphragm opening and lens opening cannot at once be equalized.

To enable us to take a systematic view of this, we must have, above all, a clear idea of what the effective opening of an objective depends upon. I begin with the most simple case, a single lens with front or back diaphragm. The determination of the effective opening of an objective, that is, to determine the base of the effective cone of light, thrown by any point upon the front surface of the lens, and to derive from it, in connection with the focal distance of the single lens or the lens combination, convincing conclusions in regard to the light-power of the objective, one will have to start, to obtain generally satisfactory results, from a certain point on the axis of the objective at a distance, A, and examine the effective cone of light emitted by the same.

The case is most simple, when the diaphragm with the opening, o, in front of the objective has been adjusted at a distance, a; the result will then be for the diameter a of the luminous circle falling upon the lens from two equal triangles, the formula:

$$1.)\qquad \frac{d}{o} = \frac{A}{A-a} \text{ or } d = \frac{o}{1-\frac{a}{A}} \qquad (1\,a$$

If A—the distance of the luminous point from the objective = infinity, the formula will become $d = o$, which is easily comprehended. But the more A

diminishes, while a remains constant, so much smaller will be the denominator of the fraction in 1 a, and d will grow in proportion; and in a similar way a growing of the value a is affected. The conclusion is, that in single lenses with front diaphragm the light power grows if the distance of the diaphragm increases and the distance of the luminous point decreases.

The case is more complicated when the diaphragm is behind the single lens. While in the opposite case the focal distance of the lens is immaterial, when the rays pass the diaphragm before falling upon the objective, they are here first refracted through the lens, and after that the effective cone is cut out of them by the diaphragm. Here we have to take the well-known formula $\frac{1}{F} = \frac{1}{A} + \frac{1}{B}$, in which F signifies the focal distance, A the distance of the luminous point, and B the distance of the picture from the lens. If we calculate from it the value of B, we obtain $B = \frac{A\,F}{A-F}$; and if we consider, that from similar triangles results the equation $\frac{d}{o} = \frac{B}{B-a}$, we obtain from it and the former after charging

$$2.)\qquad d = \frac{Fo}{A - a + a\frac{F}{A}} \text{ or } d = \frac{Fo}{F - a\left(1 - \frac{F}{A}\right)} \qquad (2a.$$

If A, the distance of the luminous point from the objective = infinity, the formula will assume the simple form $d = \frac{Fo}{F-a}$, corresponding with the one developed by Mr. Miethe, and to which I will here draw attention. In proportion to the decrease of A will the denominator of the fraction in 2, increase, while a remains constant, and so much smaller will therefore become d, but reversed it will increase with the increase of a. The conclusion is that in single lenses with back diaphragm the light-power increases if the distance of the diaphragm increases and the luminous point removes.

It might now appear as if the case under consideration had only a theoretical and no practical value—single lenses with back diaphragms generally finding no application. But a short reflection will demonstrate that all combination lenses, doublets and triplets, in short, the largest number of lenses finding application, will have likewise to be classified under this head. With all, the diaphragm is behind the front lens-combination, and the placing of further lenses behind the same can exercise no further influence.

The result of this is, that all double objectives generally used are in a peculiar opposition to the single lens with front diaphragm, an opposition, which, so far, has not yet been expressed clearly by anybody, and which therefore must be explained thoroughly, with all its practical consequences.

If in landscape lenses and double objectives of exactly the same focal distance the same diaphragms are applied, the double objectives, when focussed "*ad infinitum*"—aside from inner absorption and reflection—will have the greatest light power. But this difference will diminish the nearer the object is to the lens. Now, the light power of the double objective will diminish and that of the landscape lens will increase.

While, therefore, with all double objectives and triplets the foreground near to the objective shows a proportionate weaker light-force in respect to its actual light, the opposite is the case with landscape lenses.

Distant objects, on account of their bluish coloration, showing a decidedly sharper delineation, the division of light and shade through the landscape lens is produced to much more advantage than through other objectives. These differences are of course not very great. Take a landscape lens, for instance, of a focal distance $F = 50$ c.m., and a diaphragm o of 10 mm. diameter at 25 mm. distance, and a double objective of likewise 50 c.m. focal distance and a diaphragm o of 10 mm. diameter at 50 mm. distance of the front lens, which even may have a focal distance of 100 c.m., the following comparison would be the result:

(*To be continued.*)

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949 Broadway,
New York City.

To the Editors of the Bulletin:

The purpose of this communication is to direct the attention of the representative photographers of the United States to a subject of much importance to them, and to elicit their opinions upon it.

Among the laws created by legislation for the protection of the property of individual citizens, there should be one somewhere adequate to the preservation of the rights of the photographer in his own work ; but, as yet, none such exists. The general copyright laws, to which he can alone appeal, although, perhaps, sufficient for the needs of the art in its earlier days, are now utterly inadequate, because they entail upon the photographer who would avail himself of their protection an enormous and almost prohibitory amount of trouble and expense, since they demand that every photograph which it is desired to protect, shall be *specially* and *individually* copyrighted ; thus necessitating, *in each case*, the printing of the title of the subject of the picture, which must be sent to Washington, together with the copyright fee and two copies of the finished picture. When one considers the thousands of photographs which every prominent photographer of the present day would wish to protect—and to the protection of which, as the result of his study, labor and artistic knowledge, he has an undeniable right—it becomes easily comprehensible that the present conditions, simple as they seem, when considered in reference to a single picture, become by multiplication an unbearable burden :—a burden, indeed, so that there is to-day *not one photographer in the land* who does not prefer to run the risk of having his pictures pirated to going through with the troublesome and costly details of copyrighting them.

Twenty-four years ago, when the copyright laws were first amended so as to embrace photographs, the situation was totally unlike that of to-day. The number of photographs made was exceedingly small (as compared with the present time),—lithography and the other pictorial arts, which now regularly prey upon the photographer's products, were but little used or entirely unknown, and the photographic work of those days was, as a rule, too crude and inartistic to offer any temptations to pilferers. Consequently, the necessity, now so pressing, of so framing the law that it might feasibly protect the photographer as well as other brain workers, was not at all comprehended ; it was barely suspected. To-day it is hardly an exaggeration to say that most of the other reproductive pictorial arts derive their main support from the photographer's works, and this without making him any return in either money or reputation;—for in ninety-nine cases out of a hundred the appropriator (to put it *politely*) does not even give *credit* to the man whose ideas he appropriates, and in the hundredth case the pirate considers himself such a marvel of honesty and liberality in confessing his obligation, that the idea of sharing the *profits* with the photographer who created the original, does not even enter his head. Thus it is that annually thousands upon thousands of pictures, representing the best ideas, the highest skill and the greatest artistic inventiveness of the photographer, are seized upon by the workers in the reproductive pictorial processes, who treat this pirated property as though it were honestly their own; making and selling copies for their own enrichment and advertisement, and as the copyright laws now stand, the victim is practically as powerless to prevent, as he is unable to obtain, redress for the wrongs he suffers. He cannot prophetically foresee just which of his pictures will strike the fancy of the professional plagiarist, and, by copyrighting just *those*, save them; and he certainly cannot in view of the enormous expense now involved, copyright all of the thousands of pictures he makes every year.

And here we reach the suggestive point. Why should not the law provide a feasible method for copyrighting *all* the pictures he makes, if he so desires?

As has been already stated, the *individual* copyrighting of his thousands of pictures is practically an impossibility; but why should not the photographer, by an amendment to the present copyright laws, be enabled to guard all his work from the infringer by the payment of an ANNUAL COPYRIGHT FEE?

It is not proposed that the present copyright law shall be done away with; the photographer who desires only occasionally and at long intervals to copyright an individual picture, would still have the right by the present method to do so; it is only intended, by the proposed amendment, that the man who wishes to avail himself of the privilege, shall also have a feasible method of protecting ALL his productions. The payment of this Annual Fee should bestow upon the photographer the right to print upon all his mounts the notice of copyright.

By correspondence with the Librarian of Congress, it has been ascertained that the total amount received by the Government last year from photographic copyright fees was only $3,000. Were the *Annual Fee* adopted, proposed above, though it were made only $100, there is little doubt that *many times* three thousand dollars would accrue to the Government from this source alone; and there is certainly no photographer, at all prominent in the profession, who would not gladly pay that amount—or, if necessary, even several times that amount—to secure to himself the full benefits of his labors.

As a moral consideration, it might be added that our practical friends would by this means be legally forced into honest courses; and, as a business consideration growing out of that, it might be further suggested, that they would eventually find themselves the better off for it. For, when a lithographer or other copyist saw a picture which he considered worth reproducing, he would purchase from its originator the right of such reproduction; and having thus become sole owner of that right in that picture, he would be able to insure his customers against rival imitations, and thus receive a better price for his work.

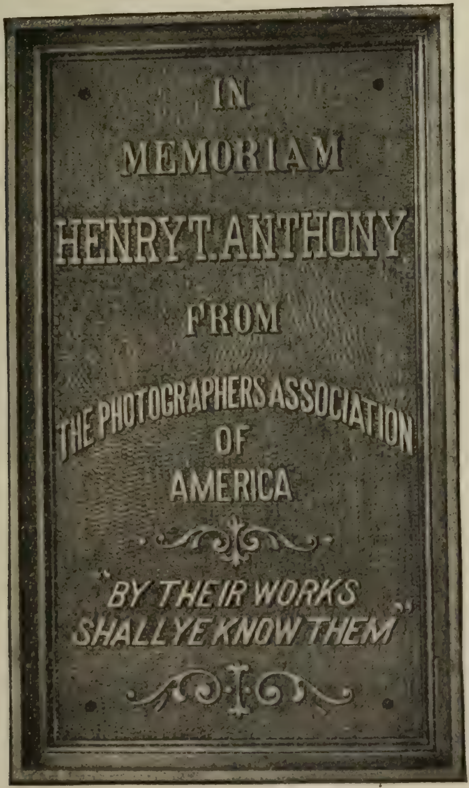
Much more might be said, and of importance; but it is probable that enough has been suggested to convince the members of our profession of the pressing necessity for some reform in this matter.

It only remains, therefore, to add that the writer has been fortunate in so interesting one of our most prominent and able legislators in this subject that he has promised to introduce it at once to Congress, if sufficient data are furnished to enable him properly to advocate the proposed amendment.

Very truly yours,
B. J. Falk.

THE ANTHONY MEMORIAL TABLET.

There has been placed in the office of our publishers a handsome bronze tablet, 16 x 28 inches, as a token of esteem for the late Henry T. Anthony from the Photographers' Association of America. The work is beautifully executed, and consists of lettering in relief on a shell-pattern ground-work; it was designed and cast by the Henry Bonnard Bronze Company, of New York. We give below a photo-engraving showing the inscription upon the tablet. The subjoined correspondence speaks for itself.



Photographers' Association of America.
Cleveland, O., October 18, 1888.

Messrs. E. and H. T. Anthony & Co.

Gentlemen,—The photographers of America for many years knew Mr. Henry T. Anthony as a man of integrity and a zealous worker in the domain of photographic art. It is probable that they owe more to him than to any other man in America for the success, that, for more than a quarter of a century was obtained by American photographers in the working of the collodion process in its various applications to the production of the negative and positive. And the process of fuming with ammonia, which has been of such signal advantage in photographic printing, removing so many causes of failure and at the same time improving the character of the print, is also due to his experiments.

No photographer, who ever had the pleasure of meeting and conversing with him will ever forget his kindness and patience in imparting information. All such feel that they have lost a personal friend.

The Photographers' Association of America wishing in some way to express that feeling and to perpetuate his memory in some suitable form, appointed the undersigned a Committee to see that the wishes of the Association were properly carried out. In attempting to do so we thought that the best way of perpetuating the memory of so valuable a worker in our art, was to present to E. & H. T. Anthony Co. this bronze tablet, to be erected in their place of business, as a slight token of the appreciation of the work of the late Henry T. Anthony, by the photographers of America. Fraternally yours,

E. DECKER,
CHARLES E. SMITH,
S. V. COURTNEY,
Committee.

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591 BROADWAY, NEW YORK, October 22, 1888.

To the Committee of the Photographers' Association of America :

GENTLEMEN,—The letter of your Committee came duly to hand, together with the bronze tablet mentioned therein.

The house receives with great pleasure this beautiful testimonial of the esteem in which the memory of the late Mr. Henry T. Anthony is held by the Photographic Association of America. They have rightly estimated his character. Ever since he became interested in photography his life had been devoted to the improvement of the art in every direction. With a keen eye to denote minute chemical effects, and an excellent memory to retain them, so that he could combine them at the proper time, he was constantly producing results which in his own hands or the hands of others led to valuable improvements. No one ever asked counsel of him in vain, whether it was the astronomer who wished to photograph the moon and the stars, or the humble beginner who desired to improve the tone of his tin-type. All their questions were carefully considered and answered, and none were so well versed in photography but that they could gain some ideas from the results of his enthusiastic researches.

He was emphatically an earnest and straightforward man. He despised everything in the shape of sham or pretense. He took no pleasure in theatrical performances, as he could not dismiss from his mind the feeling that the actors were pretending to be what they were not.

In business matters he scanned the advertisements of the house carefully to make sure that they were so worded that misunderstandings could not occur.

He was a genial man, with a keen appreciation of everything humorous, and his conversational powers were of the highest order, and though he could fill any position to which he might be called, he never felt the slightest desire to push himself into prominence. His worth was best known to those who knew him best.

Please convey to the members of the Photographers' Association of America our high appreciation of the beautiful token of regard which accompanied your letter. We feel greatly honored in being the recipients of such an enduring tribute to the memory of one of the members of our house, and whose worth we shall always remember from years of personal association.

Very truly yours,
E. & H. T. Anthony & Co.

To Messrs. E. Decker, Charles E. Smith and S. V. Courtney, *Committee.*

OUR ILLUSTRATION.

When we visited the Exhibition of the United Societies at Boston last May, we noticed several little gems of scenery made by Mr. George A. Nelson, of Lowell, Mass. After a little correspondence, we succeeded in securing the negative of one of these pictures to use in producing an illustration for the Bulletin. The result is before our readers in this issue. The view is particularly artistic, owing to the beauty of the effects of light and shade. The following extract from a letter of Mr. Nelson tells the circumstances under which it was taken :

"The view is from a hillside in Wilton, New Hampshire. It was taken in June of last year on a Stanley plate. The buildings in the distance form a typical New England homestead of half a century ago. The old elm looks as though it might have been left by the first settler who selected this knoll for a clearing. There is nothing set or conventional about the place—even the apple orchard is not set in rows. There is a repose about the surroundings that is restful to the eye ; the rolling character of the surface affords fine relief of light and shade. I had been carefully studying a near view of this old homestead, and was returning to the house of my friend with whom I was spending the day, when I turned to take another look at this picturesque old landmark. The view we have in the picture at once stood out before me. It was late Saturday afternoon, and the clouds had hid the sun all day, but now they broke at intervals, and a beautiful light flooded the landscape.

"It seemed to me that this view only needed a support in the foreground to make it a picture. A ploughman near by was about to finish his work for the week; as he came near he posed for me, and I exposed a couple of plates just before the clouds shut out the sun for the night. Naturally, I called the picture 'The Last Furrow.'"

We hope at some future day to see some more of Mr. Nelson's artistic work.

Enclosed find postal note for $3 in subscription for the photographic Bulletin for one year, from the present month. Please send the first number as soon as possible. I have been reading another subscriber's copies and now I find I cannot get along without them. M. K. Coster.

I could not very well get along without it; if the Bulletin has been stopped before this reaches you, please send from the number that the subscription expired at. H. McFarland.

I want it like my meals all the time. E. H. Luigo.

ANTHONY'S
Photographic Bulletin.

EDITED BY
Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.
and a corps of practical assistants.

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Advertisements should reach us not later than the Saturday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, six, twelve or twenty-four issues.

E. & H. T. ANTHONY & CO., Publishers.

ROCHESTER ACADEMY OF SCIENCE—PHOTOGRAPHIC SECTION.

REGULAR MEETING, September 25th.

President CROUGHTON in the chair.

Mr. G. W. Rafter delivered a lecture on "Photo-Micrography," showing the working of his enlarging camera, with attachments of his own invention, among which was a condensing lense attachment for making instantaneous exposures, with which he photographs living microscopic animals.

Mr. Rafter is an expert in this department of photographic work, and his lecture showed the practical as well as the theoretical part of the subject.

The subject for the next meeting will be Lantern Slide Making, by Mr. C. F. Hovey.

JAMES STREETER,
Secretary.

PHOTOGRAPHIC ASSOCIATION OF BROOKLYN.

A REGULAR meeting was held on Wednesday, September 19th, with the *President* in the chair.

The minutes of previous meeting were read, and approved as read.

Mr. Wagner informed the members of his intention of producing a "Composition Photograph" of the society, and requested that the members call at his studio at their earliest convenience.

The size of the photograph will be three feet by five feet.

Mr. Ferbe, Jr., exhibited his lately perfected "Success Shutter." This shutter, which is smaller in proportion to others, is placed between the lenses and has no small or delicate parts to get out of order, and was especially admired for its time movements and the absence of any jar to the camera. It is not necessary to hold on the bulb, as the wings will remain open until pressed the second time. Any desired length of rubber tube can be used, enabling the operator to take his own picture with the group.

CHARLES M. HEID,
Secretary.

SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

SPECIAL MEETING, SEPTEMBER 21, 1888.

THE meeting was called to order at 8 P.M. The *President* in the chair.

The *President*—Gentlemen: this is a special meeting; the first meeting of the year. Under the new Constitutuion we were to have no meeting until October, the first regular meeting occurring on the second Tuesday in October. But, as a great many of us have got back to the city it seemed to be the general desire to have a special meeting, as we have a number of interesting things to offer. So this meeting has been called; and I am very much gratified to see so many here.

As announced on the card, the first matter to be brought before the society is a new magnesium lamp, which Dr. J. J. Higgins has very kindly consented to bring and show.

Dr. HIGGINS then read a paper, describing the construction and operation of the lamp, and, in the course of the reading, made the following explanatory remarks:

The lamp I have brought to your notice is a simple alcohol lamp with a large cylinder packed very tightly with wick; which wick never needs trimming by reason of a perforated plate super-imposed upon it. The magnesium is introduced in the centre of the cylinder. The power to drive it is derived by the operation of two bulbs. By repeated compression of the end bulb we can get whatever quantity of power may be desired, and so drive the magnesium with velocity through the flame. The lamp, when once lit, is ready for service, either at the moment of lighting or at any reasonable length of time afterward. Say, an hour afterward. It will last at least an hour.

You will notice the character of the flame at present. I want to call your attention to what takes place when what is termed the "erector" is placed over the flame, it becomes one intensely blue column of light, and burns steadily. When ready for exposure you simply make such a number of compressions of the bulb as are desired, and then, by a mere tap of the finger your illumination is effected. There were fifteen grains of powder in there.

Another form in which it may be used is with a single bulb.

When using a single bulb it is advisable to interpose a slight check for the purpose of preventing the sudden rush of air, thus blowing all magnesium out of the tube. By such means we are enabled to give a repetition of slight, small exposures, each one of those exposures having only three grains of magnesium, and either one of them sufficient for the taking of a portrait. Now, in this case the center bulb is not used, simply the end bulb. So you can keep on almost interminably. It is exceedingly applicable for the taking of interiors.

Here is another form of lamp, in which, in addition to the center tube, there is a large reservoir of magnesium, which holds sufficient for at least one hundred discharges. The lamp can be used in this wise by the interposition of a T piece. You can use as many lamps as you please and can discharge them simultaneously; the lamps can be placed in different parts of an interior. The use of a tripod is simply for convenience. The lamp can be set upon a table, or anywhere. The T piece is necessary so as to connect the two lamps. Of course the length of this T piece can be varied to any extent.

The wick is packed very tight in the cylinder, so as to prevent the danger of contact with the alcohol in the cylinder, so that you can use it in absolute safety.

Mr. BEACH—If you had a pipe 20 feet long would you not require a little larger bulb?

Dr. HIGGINS—If you will call my attention to it I shall be glad to speak of it afterward.

The erectors are what do the work. There is an immense amount of light.

In relation to the point as to which the gentleman has just questioned me, where the length of the intermediate tube is from 20 to 50 or more feet, as, for instance, in the taking of a theatre scene at a dress rehearsal; in that case we have our lamps made at least 4 inches in diameter, to hold a quarter of an ounce of magnesium. We can make these lamps with 50 or 150 feet of tubing. It is entirely immaterial how long the tubing is. The motive power used may be an ordinary pair of bellows, with this T piece connected with it instead of with this bulb; and at the moment that you want the explosion the force of your foot upon the bellows will discharge the lamps at almost any distance.

On motion a vote of thanks to Dr. Higgins for his demonstration and paper was unanimously passed.

A Member—How far should the subject be before the lamp?

Dr. HIGGINS—Within 10 feet. I may add here, that if you put 15 grains or 20 grains of the magnesium into the lamp, you will have too great an illumination for any parlor in New York City.

The *President*—I believe Dr. Piffard has a lamp which he would like to bring forward.

Dr. PIFFARD—My efforts this summer have been in the direction of producing a magnesium lamp for my own use, which should be sufficiently portable and, at the same time, sufficiently efficient for such work as I am in the habit of doing. I have one here which I shall take pleasure in exhibiting to the members. It is somewhat roughly constructed, but it will show the method of operation.

In the first place it can be carried in the pocket, and consists of two parts, an alcohol lamp, the receptacle for magnesium, and a bulb with which to blow it through the flame.

Dr. Piffard then showed the practical operation of the lamp.

The *President*—I believe that Dr. Higgins will also show us a novelty in the way of an appliance connected with photography. If he is ready to do so we shall be glad to hear him.

A Member—I would like to ask Dr. Higgins if he is in a position to state what the elements are and what the chemicals are.

Dr. HIGGINS—I am not. It is patented on the other side, and it simply came to me as a sample, and thought it might interest the members of our society.

It will run from three to five years and work just as when it was first made; and then you can renew it without any difficulty, and make it as good as ever by simply running a current through the battery in the reversed order, and you make it a new battery.

A Member—Is it an open or a closed circuit?

Dr. HIGGINS—An open circuit. If you close it it runs down.

A Member—Is it capable of being restored?

Dr. HIGGINS—Certainly; one cell is equal to two cells of an ordinary battery; and that one cell will ring a bell continuously, by experiment, I think two hundred and ninety-three hours; and then, on letting it rest, the agent had it running again for—I don't know how long. His address is 111 William street.

The *President*—Would a number of these run an electric light—an incandescent light?

Dr. HIGGINS—The word number is very indefinite. I cannot tell whether by the word number you mean three or four or fifty or any other number.

The *President*—How many would be required?

Dr. HIGGINS—Five of these little ones. Their large ones have much more power. I find that, in my office, in practical, professional work, five of these little ones will run a small incandescent light, used in examination of the throat, of about three candle-power.

The *President*—Why is not that applicable for a dark-room light?

Dr. HIGGINS—Only as a matter of expense. An oil lamp is cheaper. But this is exceedingly convenient for lighting gas. Take a coil wound with No. 18 wire, and interpose that in the circuit, and you can light the gas in a moment by a touch of your finger.

A Member—Doctor, have you measured the electro-motive force?

Dr. HIGGINS—I have; and I have the measurements all in my books at home, but did not think that it would be of sufficient interest. I only brought it to show that it would ring a bell. There is no internal resistance at all.

A Member—What is the difference in the amount of electro-motive force between a large one and a small one?

Dr. HIGGINS—I hardly would say that there was any difference. You only have more quantity in the large one. The great trouble with most of our batteries is, that if we have greater electro-motive force we want quantity also. Quantity is an absolute necessity in electrical experiments.

The *President*—Mr. Beach tells me that he has a device for changing plates in a detective camera, the invention of Mr. Hopkins.

Mr. BEACH—The device we have here is the invention of Mr. Hopkins, and consists of a simple detective camera.

It has been found that the machinery of the slides was so great and at the same time so expensive, that a new device was very desirable. This is connected by means of a little ferule that has a flange to it, so that as you put this valve into it it makes a light-tight joint, and then when you get the plates in it you shake it like this (indicating). Now the plate is in and all ready to make the exposure. On the side are two buttons for operating the shutter. It is a rotary shutter, like a disk; and you press one button for a time exposure, and the other for an instantaneous exposure. To make a time exposure, you press the second one and let it go again. The idea is to have a series of these little pockets, and all you have to do is to shake it.

The *President*—The same operation is repeated to get the plate out of the camera?

Mr. BEACH—Yes; you simply reverse it to get the plate out. The back compartment comes off, and there are two little springs on each side, and it is necessary to shake the plate pretty well, so that the momentum of the plate will bring it down.

I have another very useful little notion here, a photometer, made by Mr. Decoudin, of Paris. Its object is to determine the proper time of exposure on a gelatine plate; and perhaps some of you can see, if you get close up, that through that slit there is one large dot and three small ones. The way you use this, you turn it until the transparent dot comes around to the slit and then you turn it toward—a brown house we will say—if that is your object, and then you look through and gradually turn this disk around until the three little dots appear to merge into each other, so that you can distinctly see them. But you can see the large dot all the time. But when you cannot see the little dot, you turn it around until you see the letter itself. There are different exposures. You carry it round to the letter H and it shows four seconds and five-tenths. That would be four and a-half seconds exposure. As between a landscape and a dark house or a white house, of course a white house would take more rapidly; the point being to get the particular exposure for the particular subject. You put your machine, for instance, against the white house and turn it until you see that dot. If it should require one second of time, then you get that, or whatever it may be. If you desire to get an average time—say of one and three seconds, you take one and three together, which makes four seconds; divide it by two, which gives the average exposure, which is two seconds.

I have tried this machine most particularly in regard to lantern slides, and have been very much gratified in developing, to find that my exposures were, in almost all cases, correct.

A Member—Are those things for sale?

Mr. BEACH—I don't know. I hope they are; because it is a very useful thing.

The *President*—What has been your practice with them, Mr. Stebbins?

Mr. STEBBINS—Very satisfactory.

The *President*—In photography one of the most difficult things is to judge of the time of exposure. After all the many appliances that have been introduced, I think the majority of people, professionals as well as amateurs, still go by the rule of thumb, and only guess at it.

I have a paper from a gentleman, not a member of the society, on the subject of Overprinted Blue-Prints, which I will read. (See page 624.) There are samples here, showing the effects. These prints are cut in half, and part of them show the original, and part of them—the other half, or a portion of it—shows the effect after this operation has been gone through with.

I have also the report of the Lantern Slide Committee, which I will now read.

REPORT OF THE LANTERN SLIDE COMMITTEE.

Your Committee desires to report that since the June meeting, the organization of the American Lantern Slide Interchange has been completed, embracing seven associations, and the Executive Committee elected to supervise and manage the Interchange is represented by George Bullock, of Cincinnati, O.; Manager, Edmund Stirling, of Philadelphia, Penn.; and F. C. Beach, Secretary, of New York.

The Committee organized in New York on July 7, 1888, and prepared a special form for the use of the different associations in recording their several lists of lantern slides, and also issued special directions to the several representatives as to the subjects and other matters it would be desirable to include in a lot of one hundred slides. It is the wish of your committee that the lot of one hundred slides to be sent out by this Society this fall, be of a high order of merit and represent the work, as far as possible, of a large number of members.

The slides should be selected and be ready to send out by October 15th next, and it is hoped members interested in slide making will lose no time in submitting to the Committee, each, a number of slides of such subjects as they may have, at the meetings for testing slides on Wednesday nights, September 26th and October 3d, also on Thursday night, October 11th. Views illustrative of scenery in New York State, or of interesting subjects in New York City, are especially desired.

Members of the Committee are ready at any time to give information in regard to lantern slide making, and will assist members on certain days—September 23d, 30th, October 7th and 14th, by practical demonstrations.

Blanks for preparing a list of slides will be sent on application. It should also be borne in mind that the subject label be affixed on the right-hand end of the cover glass of the slide, as the picture is seen in its natural position, while the thumb label should be placed on the lower left-hand corner of the same.

As soon as the one hundred slides have been collected, it is the intention of the Committee to exhibit them before the Society, which it hopes to do on Friday evening, October 26. The Committee will also endeavor to arrange for the exchange of slides between individual members of this Society and members of other organizations. Should any member desire to exchange slides of their own make for any particular ones observed in any exhibition of another society's work, they are requested to apply to this Committee.

Your Committee urges upon members the necessity of sending in their slides as early as possible, and hopes it may be liberally supported in its work of collecting slides.

All the slides submitted will be returned to the respective contributors at the close of the season, except such as may be selected to go abroad.

NEW YORK, September 20, 1888.

Respectfully submitted,
F. C. BEACH,
CHARLES SIMPSON,
FRANK F. COBB,
GEORGE R. BOYNTON.

I hope that all the members will respond liberally to the request of the Committee, and that we may be represented by a worthy collection of slides.

The next in order will be the presentation of the Kodak Camera by Mr. Beach.

Mr. Beach then read a paper on the Kodak Camera.

The *President*—The next meeting will occur on the second Tuesday in October; the regular meeting.

While we are waiting for the slides to be shown on the screen, illustrative of the Kodak Camera, we will have a social conversation.

After an exhibition of the slides by Mr. Beach, Dr. Piffard exhibited some prints made from orthochromatic plates, prepared according to the method recently published by Ives, and stated that if used immediately after the alcohol bath, they were all that could be desired, but if washed, as advised by Ives, there was great loss of sensitiveness, though they still worked bright and clean.

Meeting adjourned.

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

A STATED meeting of the Society was held Wednesday evening, October 3, 1888, with *Vice-President* JOHN G. BULLOCK in the chair.

By direction of the President, Messrs. John G. Bullock, Samuel M. Fox and Robert S. Redfield, were appointed as members of the Joint Exhibition Council to represent the Society in connection with the next exhibition, which will be held in Philadelphia in the spring of 1889.

The *Secretary* read the report of the Board of Judges for the Second Annual Joint Exhibition recently held in Boston, as submitted to the Committee of Arrangements of that Exhibition.

The Committee on Membership reported the election of the following active members: Frank S. Lewis, T. T. Eckert, Jr., Robert E. Pettil and Charles Schaffer, M.D.

The paper for the evening was read by Mr. John Bartlett, on the Successful Use of Flash-Light Compounds in Photography. See page 620.

Mr. S. M. Fox thought a common mistake in flash light photography was uncapping the lens too soon. This should be done only an instant before igniting the powder, otherwise the light of burning lamps, etc., were unduly impressed on the plate. He mentioned a case in which a lighted lamp which had been used as an aid in focusing, was carried across the room after the cap was removed, the result being a streak of light on the plate.

Mr. Stirling recommended the use of a double pneumatic exposing and igniting apparatus, one bulb and tube opening the lens an instant before the other ignited the powder.

Mr. W. H. Rau advocated the use of large charges of powder to give plenty of light, particularly with interiors or for dark drapery.

Mr. Supplee said the same rules should govern as with daylight exposures, bearing in mind that with a group requiring the camera to be at a greater distance than with a single figure if the distance was doubled, the exposure should be quadrupled, consequently four times the amount of powder would be required, other things being equal.

Dr. Charles A. Oliver stated that there was one point in Mr. Bartlett's paper to which he desired to take exception, and that was that the foreign observers had obtained successful results in Retinal Photography. On account of the convex surface of the anterior portion of the eye, there was in all of the results so far obtained so great a reflex, that the picture gave nothing more than a vague idea of the fundus of the eye, associated with a large cone-like light-streak. He had been working at the subject for more than two years, and had found the greatest trials in constructing a fixed apparatus. The corneal reflex he thought he had at last conquered by the adoption of suitable lenses. As soon as practicable, he would, in connection with Dr. Wharton Sinkler, read a short paper before the Society upon the subject.

Mr. Walmsley exhibited and fully described Eastman's new "Kodak" Detective Camera, probably the smallest, most compact and effective camera of the kind yet introduced. The camera contains a roll holder, with material for 100 circular pictures 2⅝ diameter. The lens is of the rapid rectilinear type of short focus, requiring no adjustment. Either instantaneous or time exposure may be made.

Mr. Carbutt showed a negative made on an othochromatic plate taken from a package prepared and packed just one year ago. The plate had every appearance of one freshly prepared, the time which it had been kept having had no deleterious effect upon it.

Adjourned. ROBERT S. REDFIELD.
Secretary.

COLUMBUS CAMERA CLUB.

THE meetings of the Columbus Camera Club, during the past few months, have been somewhat irregular, owing to the many demands upon the time of the members, but they have not been lacking in photographic ardor. The G. A. R. Encampment and the Ohio Centennial Exposition have furnished abundant opportunities for work; one member has made forty-three negatives of street parades, which are of almost daily occurrence, and detective camera shots have been too numerous to record.

There are a great many detective cameras in this city, and they have become so familiar to the Columbus public that it is no longer possible to make a "snap shot" without the knowledge of the bystanders. This, however, is not a serious objection, as their principal value lies in their convenience. Those persons residing in the East, which is free from the dense clouds of bituminous coal smoke, so prevalent in all Western manufacturing cities, have no idea under what difficulties detective camera work is accomplished in a city like Columbus.

Through carelessness many club members fail to pay their dues as promptly as is necessary for an efficient management of the club's business; to overcome this the Columbus Camera Club have recently adopted a by-law, which it is hoped will prove effective in correcting this thoughtlessness, viz.: "Members in arrears for more than one month shall have their names posted on the club bulletin board."

The photographic department at the Ohio Centennial Exposition is not as extensive as it should be; there is no exhibit whatever of photographic apparatus, which indicates an unusual lack of enterprise on the part of manufacturers and dealers, for surely an Exposition that is visited by nearly half a million people furnishes unusual advertising facilities. It is also a matter of regret that the Columbus Camera Club was not successful in creating sufficient interest on the part of the many amateurs in the State to make a State amateur exhibit.

The Columbus Club has met with a great loss in the removal from the city of Professor A. H. Tuttle, who has been one of the most valuable members of the club; he was not only unusually successful as a photographer, but he has the happy faculty of imparting information to others in such a way as to make it clear to the commonest understanding. We heartily wish him every success in his higher position at the University of Virginia.

F. H. HOWE, *Secretary*.

Bibliography.

SUN & SHADE, New York. Photo-gravure Company. No. 2, October, 1888.

The second number of this unique publication is before us. It is an improvement on the first number, and that was most excellent. If it continues to improve it will soon be without a rival in art literature.

The supplement plate of the number is a charming photo-gravure, "Evening," from an oil painting by Robert C. Minor. The soft, delicate tones of the original lose nothing in the reproduction. A portrait of the statistician Edward Atkinson, from the original negative, follows. A delightful composition is "Bits of the Hudson," also in photo-gravure. Then comes a theatrical piece, "The Minuet," from the comedy of "Little Puck," and a surprise in an architectural plate, printed by a new process in colors. Two etchings by Mr. Otto Bacher, are excellently reproduced. Sketches of the new Consolidated Exchange, and two reproductions from engravings of pictures by foreign artists, one from this year's Salon, make up a most interesting number.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this.*

Q.—J. R. D. writes: Please let me know by return mail, if there is any chemical that will take the stain of hypo or pyrogallic acid out of polished white marble.

A.—We do not know of any material that you can put upon marble to remove the stains of pyrogallol or hypo that will not at the same time injure the marble. You can remove stains of this kind with hydrochloric acid, if they are not too deep, but the acid must be used very dilute, and the stone will require repolishing afterwards.

Q.—M. E. S. writes: Will you please print formula for ferro-prussiate paper?

A.—See answer to S. W. S. in last BULLETIN, page 607.

Q.—H. C. writes: Will you please tell me how a large group is made; the negatives to be made separately and grouped on an oil background? Who paints the background for such a work.

A.—The groups are taken in an ordinary studio and then pasted on canvas, the background being worked in afterwards. Ashe or Seavey, of New York, would paint in such a background. By carefully touching out the joints of the groups and then making another negative of the whole, the large groups with hundreds of people in them are obtained.

Q.—A. E. D. writes: I take the liberty of asking for an answer to the following question, through the columns of your able and valuable journal. In the number of May 28, 1887, of the BULLETIN, was a picture of Colonel A. C. M. Pennington, playing chess with himself and also looking on. Being interested in photography, as an amateur (having first started in in the course at Lehigh University three years ago, under Dr. Chandler), I tried myself to take a picture in the same style as that in which Colonel Pennington was taken, attempting, however, only a double-picture. I found that a double-picture (or, a person sitting in two different positions in the same picture), could be taken on a wet-plate by simply making two exposures on the same plate in different positions, regard being had for the background. But this would not work for a dry-plate; so I tried using diaphragms in the camera—taking a 4 x 5 (size of plate) card, cutting in two equal parts, and laying each half in succession over the plate while taking two equal-timed exposures in camera. This, however, did not work well, as the diaphragms had to be so carefully placed to avoid showing the line of intersection when developed. Would you please tell me through your next BULLETIN how the photograph of Colonel Pennington was taken, or how any such pictures can be made? If you will, you will greatly oblige.

A.—See BULLETIN for 1887, page 95, for making two pictures on one negative. Colonel Pennington never consented to the publication of his method of procedure; but with the renewed interest upon the subject, both here and in Europe, he may ultimately be induced to do so.

Q.—E. D. B. writes enclosing purple print: The enclosed was a blue print treated exactly as described in No. 7 of Volume 18, 1887, of the Photographic BULLETIN. If you can suggest any reason for my failure to get a brown tint will you kindly inform me through the BULLETIN. I have tried different makes of blue paper, but with the same result.

A.—The trouble with your print is that the tannic acid was probably impure and contained gallic acid, which would give the result you have obtained.

Our correspondents will please notice that in addition to the rule given at the head of these columns, we shall not take any notice of anonymous communications. We desire the name and address of our correspondents, not for publication, but as an assurance of good faith.

Views Caught with the Drop Shutter.

$25 REWARD.—D. A. Loomis, of Fredonia, Kansas, has lost, stolen from his studio, on September 21st last, a No. 5 (No. 27,362) Euroscope lens, half-size Darlot view tube, a lightning shutter, and a retouching glass. The Euroscope was fastened to a black box 9 inches square, and the shutter was attached to the inside of the box. Lens was too long focus for his camera. The above reward will be paid for the return of the lenses, etc., or any information about them.

N. W. STARBIRD has purchased the interest of Mr. C. K. Selee, of the firm of Selee & Barker, 56 Bromfield street, Boston, Mass. Hereafter the firm will be Barker & Starbird.

M. GALLET, of the firm of Blanchet, Freres & Kleber, of Paris, the celebrated makers of the Rives paper, recently paid us a short visit, which we enjoyed very much. M. Gallet is a gentleman of culture as well as business tact, and we regret that his stay with us was so short.

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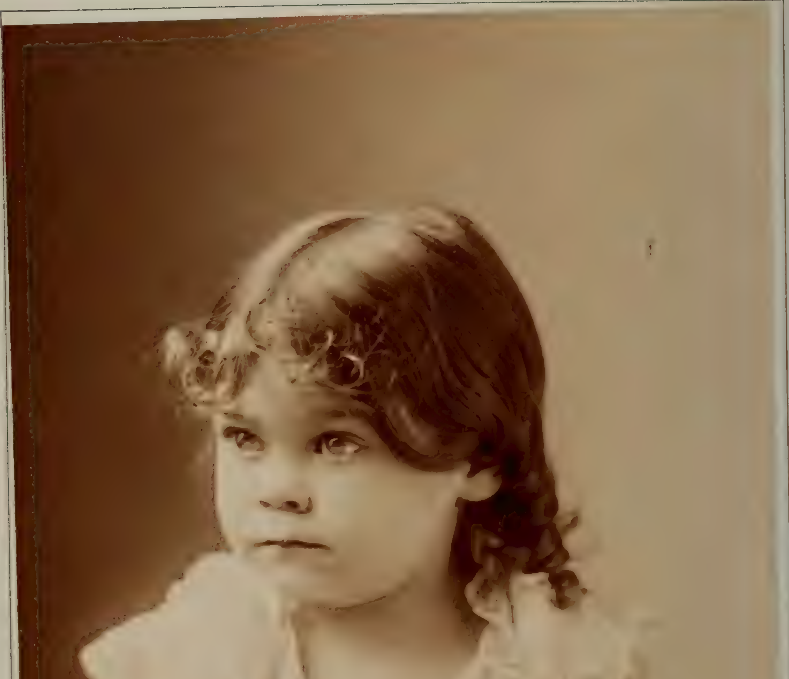

Negative on
Stanley Plate.

Printed on Ex. Brilliant
N. P. A. Pense Albumen Paper.

PHOTOGRAPH BY

Dana

ANTHONY'S
Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

NOVEMBER 10, 1888. Vol. XIX.—No. 21.

A PRACTICAL SUBSTITUTE FOR GLASS IN PHOTOGRAPHY.

From time to time we have had to record the appearance of various methods of dispensing with the use of glass for negative making or the use of some transparent material that will take the place of glass for photographic purposes.

One of the earliest efforts in this direction was made by Scott Archer very soon after his application of collodion to the production of the negative on glass. Archer proposed to coat the glass first with gutta-percha dissolved in benzole, and upon this flow the collodion. After drying, the film was flowed with the gutta-percha solution, leaving the collodion between two films. By soaking in water this triple film was made to leave the glass.

About the same time methods of coating the collodion film with gelatine and stripping were devised, and had a limited application. Warnerke used collodio-bromide tissue, which was enamelled paper coated with india-rubber and collodion. But all these methods involved great expense in manufacture and a corresponding increase in the price of the material to be used as a substitute for glass.

When gelatine-bromide emulsion became a competitor with and finally drove out collodion, new efforts were made to produce some practical substitute for the glass negative, and various methods of stripping the gelatine film from its glass support were devised. But here again there is the trouble of the extra manipulation after the negative is produced upon glass or other material. The production of the negative upon glass and its being stripped and transferred to some other transparent support is a manipulation requiring considerable skill and a very perfect adaptation of the new support to take the film after removal from the glass. When paper is used as a support, the same troublesome transfer has to be made.

The method of stripping and transferring the film having been tried and found impracticable, inventors turned their attention to the production of some actual substitute for glass, having all the transparency of the latter and none of its disadvantages, in the matter of fragility or weight.

One of the earliest workers in this direction was the late Walter B. Woodbury, who made paper transparent with dammar varnish and then coated it with the

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gelatine-emulsion. But in this case the grain of the paper could not be eliminated. Then came the improvement upon this method by Froedman and the invention of the Vergara film, which appeared all that could be desired. The expense of production and the consequent high price of the Vergara film have retarded its introduction, as well as some difficulties in its manipulation, principally the trouble incident to drying the thin film.

Every intelligent worker in photography has seen for some years, that, having a successful gelatine emulsion, the use of some other material besides glass, as a support for this emulsion, was only a question of time. Several years ago we had the idea of working in this direction, but a few experiments made at that time were all that we could do, and the pressure of other more important matters left our ideas without much fruit in a practical direction.

We are very glad to be able to place on record the production of a really practical substitute for glass by that veteran American dry-plate manufacturer, Mr. John Carbutt. He has succeeded in coating a thin, transparent and pliable support with bromide emulsion in such a way that it is an excellent substitute for glass. It is claimed that this support is only one one-hundred of an inch in thickness; but we think it is somewhat thicker. Nevertheless it is perfectly rigid in water, does not become limp from any amount of soaking either in developer or in the fixing bath, and in fact is really and truly a substitute for glass plates in the production of negatives, at least. We do not doubt but that it can be used in the production of transparencies and lantern slides. This new material is called "Flexible Film," and is certainly the best and most practical of all the substitutes for glass that we have seen. Coated with emulsion, it presents the appearance of a pliable, light, and translucent film, easily manipulated, and in fact as readily managed as a glass plate. The film is so thin it can be printed from either side, making it available for photo-mechanical printing requiring reversed negatives. We have seen negatives made from the new film and they are not to be distinguished in the beauty of detail and clearness of the image from those made upon glass. Two prints, made from negatives of the same subject, one upon glass, the other upon the ivory film, presented no difference that could be detected by careful and close examination. In fact, Mr. Carbutt has succeeded in producing a practical substitute for glass in making negatives, and we are satisfied that he will be rewarded for his enterprise and patience by a large use of this new material. It is easily used in an ordinary plate-holder by backing each film with a piece of card to press it forward into place. Holders to carry a number of films are being devised to facilitate the use of the films one behind the other, which will make them as easy to use as negative paper upon a roll-holder. After we have completed our experiments with the new candidate for photographic favor we shall let our readers know something about our experience with the Flexible film. At present we can see no reason why they should not be used as a substitute for glass, and recommend all progressive photographers to try them.

EDITORIAL NOTES.

Mr. David Cooper, whose name is like a household word in photographic circles in the United States, has been compelled by failing health to leave his many friends here, and go to Jamaica in the West Indies. There are few men of his age who have done so much to advance practical photography during recent years. With an excellent knowledge of photographic chemistry, a manipulative skill second to none, an artistic taste that showed itself in everything he touched, and an inventive faculty that served him on all occasions, he was a favorite among both professional and amateur photographers. His instantaneous pictures were always models of photographic skill, and in the production of bromide prints he achieved results not surpassed by any other manipulator. His departure from amongst us is keenly felt, for in addition to being a skillful and accomplished photographer, he was a genial friend and a gentleman in the fullest sense of the word. Our hearts go with him in his search for health, and from the sunny skies of the tropics may he drink in new life and energy that shall carry him to a good old age.

A CURIOUS experiment, which one may try, has recently been described by Mr. J. W. Osborne, of Washington, D. C. The key to it is in the fact so often observed by everyone, that newspapers, being long exposed to light, turn brown. Take a stencil or any perforated sheet of metal, place beneath it such paper as some newspapers are printed on, and on both sides put pieces of glass. Expose it to the sun's rays forty-eight to sixty hours. A print that can be easily seen will be found upon the exposed part of the paper. For paper, substitute a freshly-planed surface of white pine; the print will be very legible upon sufficient exposure. Passing a hot iron over the surface after printing serves to bring out the characters more plainly. Tinfoil is a very good substance to use for making perforations of the shape one desires to reproduce by this printing process.

ALEXANDER BLACK, author of articles on photography in the *Century*, *St. Nicholas*, "The Boys' Book of Sports," *Harper's Young People*, the *Home-Maker* and other periodicals, is collecting prints illustrating street life and character in New York, and having a large collection of negatives of his own making, is ready to exchange a few unmounted prints with any photographer, professional or amateur, who may be interested in this fascinating phase of photographic study. Mr Black's address is in care of the *Brooklyn Times*.

AN unfortunate accident occurred the other day in San Francisco, in which an employee of Mr. Sam C. Partridge, the well-known photographic merchant, met with very serious injuries. It appears that this young man, while working in the cellar, came across a flash-light pistol, intended to be used with pure magnesium powder, and being of an inquiring and experimental turn of mind, loaded the pistol with some flash-light powder. Lighting the alcohol attachment to the pistol, he attempted to produce a flash by releasing the spring, and the barrel of the instrument exploded. A fragment of metal struck his forehead and fractured his skull, while he will lose the use of several of his fingers. It is obvious that the cause of this painful accident was a misapplication of the flash powder. The pistol was intended to be used with pure magnesium, but this unfortunate young man put into it an explosive mixture containing magnesium powder and nitrate of potassium. The magnesium powder alone *burns* as it passes through the flame, the result of lighting the flash-powder is an *explosion*. It is very much the same as loading a shot gun with dynamite. The gun is perfectly safe with gunpowder, but will most surely burst with dynamite. We give the above particulars as a caution to our readers who use flash powders.

Be careful *not* to use them in pistols that are intended for magnesium powder *only*. The flash-powders can be used in pistols also, but they must be designed for the purpose, as for example Dr. Piffard's photogenic pistol and cartridges.

We notice that an interesting *relique* has recently been acquired by the Photographic Club of London. It is a daguerreotype, eight by ten inches, a view of Rome taken in the year 1839. Although not gilded by Fizeau's process, invented long afterward, it is said to be in a very fair state of preservation.

The Photographic Society of Philadelphia has already appointed a committee to make arrangements for the joint exhibition of the photographic societies of Philadelphia, Boston and New York in the Quaker City next spring. Messrs. John G. Bullock, Samuel M. Fox, and Robert S. Redfield are the members of this committee.

Ottomar Anschütz, of Lissa, in Germany, the photographer who has made such wonderful instantaneous photographs of birds and animals, has been experimenting on making pictures of cannon balls in flight. He has established the fact that a projectile moving four hundred meters (about 1,300 feet) a second, can be photographed, and that the exposure of the plate was only about the ten-thousandth part of a second.

Mr. H. J. Newton's excellent picture of the New York steamboat "Crystal Wave" is reproduced in Lichtdruck by the Obernetter process in the September number of the *Photographische Rundschau*, the organ of the Vienna Amateur Photographic Club. It is an excellent reproduction and worthy of the handsome original.

In a letter from Professor Luigi Borlinetto, of Firenze, Italy, we hear of the projection of the "Societa Fotografica Italiana," which is to embrace both professional and amateur photographers, and to be devoted to the culture of the art in all its scientific and industrial applications. We are glad to note that it embraces both amateurs and professionals, and hope that our own societies will follow the same policy, as one best calculated to advance our art.

We have to note the organization of the Buffalo Camera Club with the following officers: President, Dr. G. F. H. Bartlett; Vice-President, J. N. Adam; Treasurer, Charles E. Hayes; Recording Secretary, Edwin L. Burdick; Corresponding Secretary, Thomas Cary Welch, 33 Law Exchange, Buffalo, N. Y. The club is only about a month old and has forty members. We shall be glad to hear of the work of this new company of workers in our art, and welcome them to our pages.

Our good friend, James Landy, of Cincinnati, has recently gained some new laurels at the Centennial Exhibition in that city. He has obtained a gold medal for portrait photography; a silver medal for his "Hiawatha" picture; and a silver medal for the best porcelain pictures in water colors. Surely honors fall upon him thick and fast.

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All communications for the columns of the Bulletin *should reach us on Monday preceding the day of issue, to insure their publication at that time.*

LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

Albert's New Color Sensitive Collodion-Emulsion and How to Make It.—Anastigmat, a New Lens.—Zapon, a New Varnish.

In my last letter I wrote to you about the color sensitive emulsion of Dr. Albert. This, of course, has kept the experimentalists pretty busy. My son and myself have made numerous tests with it during the last weeks, and we have succeeded in recognizing the nature of the preparation and in imitating it.

We commenced with making a collodion emulsion after the formula first published by Warnerke, only slightly modified, and compared the same with Albert's uncolored emulsion. The result was, that Albert's emulsion was not in the least more sensitive than the old one made after known formulas.

If therefore Albert's colored emulsion shows considerably more sensitiveness than all other collodion emulsions, it is due only to the additional coloring matter.

This coloring matter we examined closely and recognized it finally as a very concentrated solution of erythroside of silver, with ammonia and picric acids in alcohol.

We tried to imitate the same, but found that ordinary alcohol will not sufficiently dissolve erythrosine. It dissolves only $\frac{1}{1000}$ erythrosine, while Albert's coloring matter appeared almost five times more concentrated.

My son recognized at last that pure methyl alcohol (not "methylated spirits") will dissolve at least five times more erythrosine than ordinary alcohol. Thus we succeeded in making a color solution, which proved completely equal to the one of Albert, that is, with the bromide emulsion collodion made by ourselves. The formula was published in my book: "The Photography of Colored Objects in the Proper Tone Proportions," in German published by Oppenheim, Berlin, pp. 46 and 47; in French published by Gauthier Villars, Paris, p. 56.

Our preparation was completely equal to the one of Albert with regard to ordinary sensitiveness and color sensitiveness.

Albert's secret is therefore unveiled. Still Dr. Albert deserves credit for having furnished the first practical proof, that a sensitiveness can be given to the old collodion emulsions by addition of suitable coloring matters, that is, optical sensitizers, which is equal to that of the gelatine emulsion. This interesting fact would not have been discovered so soon without him.

The optical sensitizer, which my son and myself apply, has the following composition:

a. 0.5 grams erythrosine 100 c.c. pure methylic alcohol (not methylated spirits).

b. 4 grams nitrate of silver, dissolved in 4 grams of hot water and mixed with 96 c.c. of alcohol.

To prepare the sensitizer (eoside of silver), mix 10 c.c. of *a* with 1 c.c. of *b*, and 4 c.c. of alcoholic liquor of ammonia.

This solution keeps well for a long time. Ten volumes of collodion emulsion are mixed with one volume of the sensitizer. The collodion does not keep, but must be used in a fresh state. For dry plates it is not suitable.

In the photo-optical field great novelties are in preparation. The new optical glasses, which are at present produced in Jena, warrant the possibility of largely increasing the capability of our lenses in an unforeseen manner.

One of the worst defects of our photographic lens is the so-called astigmatism at wide opening. This causes the outer parts of the picture towards the edges to have not one, but several foci, and in consequence of which only a very limited part of the picture is sharp at full opening. The astronomer Miethe has now succeeded in constructing an objective, which is almost free from astigmatism. The same has been ground in the optical institute of Hartnack in Potsdam, and has splendidly accomplished all theoretical expectations.

The objective is essentially, with regard to the diaphragm plane, symmetrical; and in its exterior not unlike the aplanats, only that a larger lens opening is necessary by the proportionately long distance of the lenses from each other.

The lenses are cemented with very thin meniscuses, made of very thin glass, in which the condensing lens, contrary to former constructions, has a much higher refraction index than its compensator. The inner surfaces are so curved, that no luminous spot will appear by reflexion. Both components are also removable in such a manner that they can be brought nearer by about one-quarter of the total distance. For portraits and instantaneous pictures, as well as everywhere, where a very short exposure and no picture-circle beyond 65 degrees is desired, the lenses are set apart as much as possible. The largest opening is then one-seventh and the intensity of light of the thin flat lenses is accordingly very significant. The field is absolutely even and free from all distortion. The sharpness, particularly with a medium diaphragm, is exceptionally fine. The astigmatism is very greatly reduced, so that it amounts to less than one-tenth of that of the antiplanat. An evenly sharp picture-circle is herewith obtained of 50 degrees with full opening, while with a smaller diaphragm the sharpness will reach to the end of the picture-circle comprising 66 degrees.

If the lenses are brought together as near as possible, which can easily and quickly be executed by a suitable arrangement in the mounting, an instrument is obtained which is very similar to a wide angle. The picture-circle will then reach a diameter of over 90 degrees, and is sharp to the edge with a diaphragm opening of one-twentieth to one-fortieth, evenly lighted, and without a luminous spot. A distortion also could not be found here. The focal distance is shortened considerably by bringing the lenses nearer together.

If the front lens is entirely removed, a landscape objective of double the focal distance is obtained, which, with proportionate intensity of light, comprises a considerable angle and gives such correct lines, that it can well be used for architectural work, if the diagonal line of the plate amounts to five-fourths of the focal distance.

The objective has a so-called Iris diaphragm, whose opening is regulated by a button, while an index gives the opening. The price for this objective has not been fixed, but on account of the large lenses and the expensive glass material, it will not come cheaper than already existing objectives of equal focal distance.

In one of the last meetings of the Amateur Association, a new varnish was shown, coming from Japan, and called Zapon varnish. It has the following remarkable properties :

Zapon is considerably harder than any kind of varnish, and gives a coating, which, regarding hardness, equals more a transparent enamel than a varnish.

While drying, it becomes smooth, requiring no ability to do this, as when varnishing with the brush. The coating becomes so even and hard, that it is not visible to the eye, and cannot be detected by touching.

It does not become smeary or sticky, and if material coated with the same, is handled, it shows no chalk-like marks, like varnish.

Flymarks have no influence upon Zapon. From goods, which have been coated with Zapon, the dirt can easily be removed with soap and water without injuring them.

A completely faultless coating is guaranteed in all cases, the articles to be coated, without regard to size or shape, being immersed in Zapon. A great saving of time and labor is evident by such a manipulation in comparison to varnishing with the brush. The method is the same as that of japanning, except that there is no need to remove the remainder, every drop disappearing by itself during drying. On the edges or cavities no thick dust will form, but the coating is completely even and uniform.

Matt objects will have no gloss with a coating of Zapon, and heat has no influence as soon as it has become dry.

Berlin, October, 1888.

THE COLORS IN PHOTOGRAPHY.

BY F. STOLZE.

(*Continued.*)

This theory is confirmed by the most remarkable fact of so-called color-blindness, which is, that less colors can be distinguished by the eye in question. All cases heretofore known—and they are numerous—are divided into two classes, that of the red-blind ones and the other, whose name has not been adopted yet, that of the green-blind ones. The former are by far the most numerous; they cannot distinguish red at all, but green, violet and their mixture, the blue. It seems that the spectrum-red excites strongest the green sensitive nerves and appears to them therefore, when intense, as a weak but saturated green. Spectrum-yellow will then appear to them as a light-strong saturated green. This explains why they take red oftentimes for a weak yellow. Green appears to them light-stronger than yellow, but violet being predominate therein, it appears whitish. The greatest intensity they do not see, like normal eyes, in yellow, but in blue.

White appears to them as a green-blue tone, and therefore they take the changes from green to blue for gray. Pink they take for blue, the red contained therein being missed by them; if darker they are apt to confound it with a reddish-gray tone; thus a red-blind person declared a rose and a jackass as being of equal color.

Green-blindness is more scarce and comparatively has not yet been much examined. But both classes receive more and more consideration by being unfit for certain business qualifications on account of their imperfect organization.

For the photographer it is also important to convince himself whether he is by chance not color-blind, so as not to be in the position to give to the artist a wrong description of the subject to be painted. That this can happen very easily, is shown by two facts which have actually taken place: A minister selected a scarlet-colored cloth for his robe and did not discover his mistake before he was on the point of mounting the pulpit; an artist painted on a picture he was making all the trees intensely red, his colors being labeled wrong. Those affected with this deficiency will oftentimes be conscious of it only after a number of years, and mostly not before their attention has been drawn to this condition by some friend.

After having seen now from the above that photography as well as the eye reflects certain objective appearances, but that both lines of vision by no means cover each other (act in concert), the question arises, if there is no possibility to modify the photographic process so that with regard to light-intensity it will not only produce the same results as the human eye, but that it may also reproduce by colors of even shade and equal intensity the difference of equally intense light, called colors. It may be asserted pretty definitely that such a result in all its completion will never be obtained, and that one will have to be satisfied to approach only more or less this end. That such is within the boundary of possibility is proven best by Dr. Zenker's book about "chromo-photography."

For the benefit of all those who have no exact remembrance of this excellent work, it may be remarked that it treats about the production of colored positive pictures by exposing paper prepared with violet chloride of silver behind positive colored glass pictures. The violet chloride of silver will then assume more or less the colors of the glass picture. Unfortunately a picture so produced cannot as yet be fixed completely, and will almost disappear again after a little while. It is therefore for the present of only theoretical and of no practical value. But this fact shows, that in this or a similar direction we have to proceed for the direct solution of the problem.

But there is also an entirely different method by which we can arrive at the result. Provided it is possible to produce a number of Lichtdruck plates in the photographic way, being in proportion to each other like the states of an ordinary color point, only surpassing them in fineness and delicacy of the color tones, the same as lithography is surpassed by Lichtdruck, the problem would not only be solved hereby satisfactorily, but a means would have been discovered to produce colored photography in large editions of an imperishable nature. If, therefore, even not quite such a complete reproduction of nature would be obtained in this manner, as the way first talked about (so far the reverse has been the case), the method suitable for the large production of durable pictures would drive away every other, as the negative process drove away the daguerreotype and panotype.

To attain this point, one proceeded in the following manner: It was accepted, that, having to provide first of all suitable negatives for the production of Lichtdruck plates, by which light and shade, and therefore also all color proportions, had to be opposite to those of the positive, the complementary colors, with which it was intended to print afterwards, would at first come into consideration. It was further accepted, the character of the color-print being based upon the mixture of pigments justifying it, that all color shades upon the printed picture could be pretty well produced by carmine-red, yellow and blue. This demonstrated that the negatives necessary for the Lichtdruck had to be produced for green, violet and orange-red light, which was obtained by insertion of colored glasses in front of the objective. Let us consider now how far it is possible to attain the point arrived at in this manner, by accepting the possibility first of all, of producing negative plates which either by themselves, or by making use of particular sensitizers for rays of any refraction, are sensitive; a requirement which, in its essential parts, can easily be fulfilled.

If next we will consider the color impressions which are of a simple nature, and are not based upon a mixture of spectrum colors, and restrict ourselves to the example of the orange, we will see that the deepest opacity corresponds with the most intense and lightest orange colored light, while other colors have no light impression whatever upon the plate, and therefore leave the same entirely clear.

If after this negative a positive is produced in the complementary color cyan-blue, all parts of the picture which contain no orange will be covered with this color first of all; all pure spectrum colors, aside from the orange.

The blue will be printed so dense, that it appears completely saturated, while in the orange-colored part of the picture the changes from the deepest to the lightest cyan-blue and white are visible.

Exactly the same takes place with the other pure colors. Suppose a clear color spectrum was photographed in this manner, one will obtain the surprising result, that by applications of the orange-colored diaphragm the orange part of the spectrum will become white, the other cyan-blue; by application of a green diaphragm the green part of the spectrum white, everything else carmine-red; by application of a violet diaphragm, the violet part of the spectrum will be white, everything else yellow, that is, if all those plates are printed one over another the whole spectrum will show the following color line:

Colors passed by the diaphragm.	Red.	Orange.	Yellow.	Green.	Cyan-blue.	Indigo-blue.	Violet.
Orange.	Cyan-blue.	White.	Cyan-blue.	Cyan-blue.	Cyan-blue.	Cyan-blue.	Cyan-blue.
Green.	+ Carmine.	+ Carmine.	+ Carmine.	+ White.	+ Carmine.	+ Carmine.	+ Carmine.
Violet.	+ Yellow.	+ Yellow.	+ Yellow.	+ Yellow.	+ Yellow.	+ Yellow.	+ White.
	Broken.	Orange.	Broken.	Green.	Broken.	Broken.	Broken.

Evidently, it is therefore in this manner quite impossible to reproduce the pure colors red, yellow, cyan-blue and indigo-blue, unless means were at hand to extinguish the cyan-blue in the red, the cyan-blue and the carmine in the yellow, the carmine and yellow in the cyan-blue, and in indigo-blue the yellow and the largest part of the carmine.

The above table would therefore be as follows:

Colors passed by the diaphragm.	Red.	Orange.	Yellow.	Green.	Cyan-blue.	Indigo-blue.	Violet.
Vermillion to yellow	White.	White.	White.	Cyan-blue.	Cyan-blue.	Cyan-blue.	Cyan-blue.
Reddish yellow to blue.	+ Carmine.	+ White Carmine.	+ White.	+ White.	+ White.	+ White Carmine.	+ Carmine.
Cyan-blue to violet.	+ Yellow.	+ Yellow.	+ Yellow.	+ Yellow.	+ White.	+ White.	+ White.

If successful—and this is possible if colored liquids are applied, which offer the advantage to cut off well the ultra-violet—in selecting the diaphragms in such a manner that they will let the colors pass through, which are called for in the last table, one will indeed be able to reproduce a pure spectrum in this way.

(*To be continued.*)

LOOKING BACK; OR, THE OLDEN DAYS IN PHOTOGRAPHY.

BY H. H. SNELLING.

(*Continued.*)

THE great interest taken in the discoveries of Daguerre and Niepse, from their disclosures to the world by the scientists of all countries, is manifested by the repeated publications of the press of opinions and disertations from the most learned, and by the numerous pamphlets—in some cases large volumes—most of them, however, more of a speculative character than of practical value. The French savans were the most prolific in these publications; at this day it is a little amusing to look over this announcement of new discoveries in the art of sun-painting. The whole field of chemistry was plowed and harrowed and dug over with the eagerness of a California prospecter after gold, and the slightest indication of a new sensitive surface or chemical was at once given to the press, if not as a great discovery, as a lien upon whatever might come out of it in the future. But the great original inventors, Daguerre and Niepse, turned their attention to the discovery of a method of reproducing the "natural color upon the silver plate," while Mr. Talbot of England made paper photographs his study.

In all these efforts the line of thought and investigation lay almost entirely in the most complicated and difficult experiments. So great and wonderful a process must be sought in the very depths of the hidden possibilities. Perhaps a mistake that may be discovered anon. Some of the most important inventions are remarkable, even wonderful, for their simplicity. Perhaps the problem of securing the natural colors as they appear on the ground glass will prove as remarkable for its simplicity. What element or substance in the sap causes one rose bush to color the flower red, another yellow, and its absence (probably) leaving another white. We may be told that the color depends upon the colorific rays of light; but it is not reasonable to suppose that the flower has some principle within itself to receive the particular color. Color is not only visible by sunlight, but by artificial light, even of the most feeble kind. Take a multiflora rose, the most beautiful of flowers, out of the sunlight into the darkest vault you can construct (and it loses all color except black, does it not?) and open upon it the feeblest of tapers, it at once resumes its natural color; therefore it must possess an element or substance peculiar to itself to enable it to retain some color under any light; but I am running off the track again. I have always thought that there may be a solution of the question in this direction. Find out not the coloring principle itself, for that is, or is supposed to be, known to chemists, but the element or substance in the sap of the plant that promotes it. As in many other cases the exclamation bye and bye will be: Why did I not think of that before?

Among all the practical and amateur Daguerreans of the early days of photography in America we can mention but few who originated anything of importance prior to the introduction of the collodion film, and these were mostly in apparatus and appliances. The Messrs. Lewis, of Chatham street, New York City, were quite prolific of inventions in apparatus and appliances; Mr. E. Anthony, of Broadway, in the same city, ranking second in this respect, but taking first rank in elegance of construction. Mr. French, of Boston, also put forth some improvements; it is not necessary at this late day to specify any of these inventions or improvements, except where they played some part in the great results which followed the introduction of the paper process.

About a year ago I read an advertisement in the BULLETIN of a revolving background, invented and patented by some one "out West." The revolving background was first introduced by me as early as 1848 or 1849, which was used in E. C. Thompson's gallery; it was not, therefore, patentable at a sub-date, although I never took out a patent. I think they were used by others, but I know of only these. These articles may do good in this direction in pointing out things for which patents may be sought now and hereafter as having been used in the "Olden days of photography," and cover the trouble and costs in seeking patents.

One of the earliest discoveries in paper photography was the chromatype of M. Ponton, of Paris, afterwards improved by M. Bequerel, of the same city, and subsequently by Mr. Robert Hunt, of England, a process that might have opened a new branch of business long ago, and could yet be employed profitably; but it still lies in oblivion. Mr. Hunt called them paper daguerreotypes; I wish, therefore, to call the attention of our American photographers to this beautiful process, and the manner in which it may be employed profitably. The collodion has completely overshadowed all other processes, and hidden some much preferable for certain work.

The chromatype of M. Ponton was as follows: He saturated the paper with bi-chromate of potash simply. M. Bequerel improved upon this by sizing the paper with starch previous to the application of the bi-chromate of potash solution; this enabled him to convert the negative into a positive by the use of a solution of iodine, which combined with that portion of the starch upon which the light had not acted. This improvement, however, did not make the discovery of practical use, but Mr. Hunt's improvement or substance, is exceedingly simple, and the resulting pictures are of so pleasing a character, it will be found of the greatest value for copying botanical specimens, engravings, drawings, etc. This process is thus described by its author:

Placing the paper on some hard body, wash it over on one side, using a very soft camel's hair brush, with a solution of bromide of potassium, thirty grains to the ounce of distilled water, and then dry it quickly. When dry again wash it over with the same solution, and dry as before. A solution of nitrate of silver, one hundred grains to the ounce of water, is to be applied over the same surface, and the paper quickly dried in the dark. In this state the paper may be kept for use.

When used, the solution of silver is to be plentifully applied, and the paper placed wet in the camera, the greatest care being taken that no daylight, not even the faintest gleam, falls upon it, until the moment when you are prepared, by removing the dark slide, to permit the light, radiating from the object you wish to copy, to act in producing the picture. After a few seconds the light will be shut off and the camera removed into a dark room, or the holder may be covered with a black cloth and alone taken into the dark room. It will be found, on taking the picture from the holder, that there is but a very faint outline yet visible. Place it aside in perfect darkness until quite dry, then place it in the mercurial vapor box, and apply a very gentle heat to the bottom. The moment the mercury vaporizes the picture will begin to develop itself. The spirit lamp must now be removed for a short time, and when the action of the mercury appears to cease, it is to be very carefully applied again, until a well-defined picture is visible. The vaporization must then be suddenly stopped and the photograph removed from the box. The drawing will then be very beautiful and distinct, but much detail is still clouded, for the development of which it is only necessary to place it in the dark and suffer it to remain undisturbed for some hours. There is now an inexpressible charm about the picture, equaling the delicacy of the daguerreotype; but being very susceptible of change, it must be viewed by the light of the lamp only. The nitrate of silver must now be removed from the paper by well washing it in soft water, to which a small quantity of salt has been added, and it should afterwards be soaked in water only. When the picture has been dried wash it quickly over with a soft brush, dipped in a warm solution of hyposulphite of soda, and then wash it for some time in distilled water, in order that all the hyposulphite may be removed. The drawing is now fixed, and we may use it to procure positive copies.

The action of light on this preparation does indeed appear to be instantaneous. The exquisite delicacy of this preparation may be imagined, when I state that in five seconds in the camera, I have, during sunshine, obtained perfect pictures, and that when the sky was overcast; one minute is quite sufficient to produce a most decided effect.

This very beautiful picture is not without its difficulties, and the author cannot promise, even with the closest attention to the above directions, annoying failures will not occur. It often happens that some accidental circumstance—generally a projecting film or a little dust—will occasion the mercurial vapor to act with great energy on one part of the paper, and blacken it before the other portions are at all affected. Again, the mercury will sometimes accumulate along the lines made by the brush, and give a streaky appearance to the picture, although these lines are not at all evident before the mercurial vapor was applied; but a brush sufficiently large will obviate this difficulty; say a flat one, three or four inches wide.

The directions are to use the paper in the camera wet, but it may be used dry, if more preferable, but it requires longer exposure, from two to three minutes·

Another experimentalist advises the use of sulphate of copper in place of bromide of potassium, one drachm to the ounce of water. He says, in reference to the strength of the solution, that, if saturated solutions are used, a negative picture is first produced, but if they have three or four times their bulk of water, the first action of the sun's rays darkens the picture, and then a very pleasing effect follows, giving an exceedingly faint positive picture, which is brought out with great delicacy by the silver solution. Be sure to use pure water, especially in the fixing bath, for here arises another pleasing variation in the chromotype. If the positive picture be placed in a very weak solution of common salt, the image slowly fades out, leaving a faint negative outline. If it now be removed from the saline solution, dried, and again exposed to sunshine, a positive picture of a lilac color will be produced by a few minutes' exposure.

Examine this process carefully and critically, and the lover of photography will find much to admire and engage his attention in making it fully practical and profitable. It seems a shame to let so beautiful and interesting a process to remain in oblivion. Is not this process the first stepping stone to the "natural colors?" Is it not worth while to try these solutions in printing positives from collodion negatives, and thus do away with the expensive chloride of gold toning bath?

In the Anthotype—a product of the early days of photography—there is a large field for investigation. Sir John Herschel, who was the first experimenter with the juice of flowers and plants, found that the action of the sun's rays is to destroy the color, effecting a sort of chemical analysis, in which two distinct elements of color are separated, by destroying the one and leaving the other, outstanding. The action is confined within the visible spectrum, and thus a broad distinction is exhibited between the action of the sun's rays on vegetable juices and on argentine compounds, the latter being most sensibly affected by the invisible rays beyond the violet. The rays effective in destroying a given tint are, in a great many cases, those whose union produces a color complementary to the tint destroyed, or, at least, belonging to that class of colors to which such complementary tint may be preferred. For instance, yellows tending towards orange, are destroyed with more energy by the blue rays; blues, by the red, orange and yellow rays; purples and pinks, by the yellow and green rays. The color of the flower is not always, or usually, that which its expressed juice imparts to white paper. Why photographic investigation on this process has been so long laid aside we know not, but we know this, that the poison in the vine yields a transparent juice which, when submitted to the action of light on cloth or paper, gives an intense indelible black. This juice, we judge, is not poisonous, and could be procured by men who are not affected by the poison of the vine itself. We can handle the vine with impunity, and we have known others who have done the same. While a resident of Michigan we were in the habit of marking our clothing with this juice by breaking off a leaf and writing our name with the end of the stem. On drying, our name would appear in black of the deepest intensity, and it never faded out nor could it be washed out; it was the best indelible ink we ever saw. Why could it not be used in printing positives? and its sensibility indicates its use in the camera. It would require no developer nor fixing agent. Here is an opportunity, I think, for some photographer to make himself a name. I suppose the juice may be kept in bottles which will exclude it from the light. Of course its action in the camera and under a negative is yet to be ascertained. I have never had the opportunity to experiment with it. Perhaps I may find some one of our amateurs here to try it.

Sir John Herschel has left another incomplete process which he thought, at the time of its discovery, bid fair to become one of the most valuable photographic processes, as both positive and negative could be obtained at one operation, and the resulting picture resembled the finest engraving. This process he called the amphitype.

In speaking of Mr. John A. Whipple in last article I forgot to mention, as I should have done, his invention of the beautiful "Crayon Daguerreotype," which at once commended itself to lovers of the beautiful and to the artistic. It was the first improvement in the daguerreotype in America that obtained Letters Patent from the United States Government.

In the latter part of 1849 pictures on glass became a controversy, and the

Messrs. Langenheim, of Philadelphia, introduced them into that city, claiming to be the originators, not being aware that M. Everard, of Paris, antidated them. Discussions on American improvements now became lively.

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[*From British Journal of Photography.*]

ATMOSPHERE.

In the English school of painting, atmosphere—by which may be understood the apparent effect produced on the colors of objects by the atmosphere intervening betwixt them and the spectator—plays a most important part, and in photography, also, a picture may be made or marred according to the manner in which atmospheric effects are utilized in its production. But the manner in which the qualities of a photographic negative may be influenced by the state of the surrounding air is not confined to artistic effects, it may be viewed from a physical standpoint also. Let us first consider the latter.

All practical workers are aware how greatly the rapidity of working is influenced by conditions of atmosphere; one day the light seems most powerful in its action, while the very next, perhaps, may need exposure twice as long, or even more. It would be a work of considerable utility if any one would so investigate this matter as to compile data which should at once enable any one, before commencing the day's work, to forecast the character of the light—the character as opposed to its quantity and as governed by the clouds, height of sun above the horizon, and so forth. At present the main practical indications available are that the light is specially active during the sunlight immediately following rain, and during the prevalence of strong wind; it is usually slow when easterly winds are blowing. These little beginnings of photographic weather lore are really useful; but we would carry them much farther and more systematically.

An often-debated question is, whether a clear atmosphere does not enable more rapid exposures to be given. We were lately informed by a photographer of some experience that when he came to develop a number of negatives taken in Norway, he found almost the whole of them deficient in exposure. At the same time he led us to understand that he looked upon clear air as conductive to increased rapidity. Our view was that, acting upon this belief, this was the cause of the under exposure, though he laid the fault upon the plates. Now, though we are not inclined to deny that a clear atmosphere may accompany a specially actinic light, it is quite evident that the cause must be sought for elsewhere than in the absence of mist or of floating particles between camera and view. As a matter of fact, such mist diminishes rather than increases the exposure; but when the mist, or other obscuring cause, extends some height into the air, another factor comes into play, which may possibly be the most important of all—the filtering-out of the sun's rays by those particles of mist or motes. Professor Langley has shown that all air in inhabited districts deprives the sun's rays of a portion of their power; so much so, indeed, that he believes the true color of the sun, if viewed through a perfectly pure air of great tenuity, would appear blue instead of the present more or less familiar hue. We may, therefore, believe that a clear air will help rapidity, but not in consequence of its allowing more light to come from object to camera.

It is well to thoroughly understand this point, for important practical considerations in the borderland between the physical and the artistic here arise. We think we are right in saying that none but those who have had an actual practical acquaintance with the work have the slightest knowledge of the extent to which architectural and other photography in and about large towns is hampered by atmospheric conditions. The light that to an unpractised eye would appear all that could be wished, the expert knows is incapable of permitting the highest class of results to be obtained.

For this work, far more than for landscape, it is necessary to play a "waiting game." When some particularly desired building or street view happens to be in close proximity to a few tall chimneys, and the requirements of light and shade do not permit of early rising to obtain clear air, the work is very disheartening. A long watching may have resulted in a "clear day" at last, and then, in all probability, some huge not over-tall shaft belches forth its sooty vapor, which flows before the camera till the proper light is lost, and again the work is deferred. Crossing the palm of the stoker is often a sovereign remedy for such threatened disaster. But whenever the subject and the lighting permit it, there is no remedy like getting up early in the morning. The clearness of the air and the absence of any approach to murkiness is very striking, and when the preparation for the matutinal coffee are seen in curling streams of smoke, now blue, now white, now black, issuing from numberless chimneys, the wonder is not that photography among the buildings should ever be difficult, but rather that it should ever be possible at all.

In this regard much trouble will be saved by noting the direction of the wind: when the work lies near the outside of a town, it can only be done when the wind blows to the town from the observer. This is a little point of practice which may often prevent waste of time in reconnoitering required views, and especially is it so when some village church has to be secured. A sunny day with the wind blowing from the church to the village is the time to choose, and an old contributor once informed us that between three and four in the afternoon, before preparations for tea were begun, was the most likely time in the whole day to be sure of freedom from smoke. We have, on a former occasion, dealt with atmospheric conditions as favoring portrait work in a studio, so that we need not again now refer to it.

With regard to the artistic conditioning of photographs by the atmosphere, it may be said that some of the most beautiful photographs ever taken owed their beauty to the manner in which the atmosphere was rendered. It is the most difficult condition of all to treat with success, for, as a rule, the silvery haze or the delightful gray with which a partially transparent air suffuses all objects in the distance and middle distance, becomes in a photograph a miserable, cold, blurring "fog," an expression which, when employed in its recognized photographic sense, is utterly condemnatory. Isochromatic plates may be expected to be of great help in this direction, but if it be the function of photography to represent what is seen, then it is only mental vision that will be represented when atmospheric effects are in question, from the simple fact that a very little haze, as regards ocular effect, comes out upon the negative as a ruthlessly overwhelming gray. But if a certain effect is brought out, and the occasion is waited for, when the experienced worker sees that it can be obtained, though to the eye something quite different is upon the lens, then effects of the most charming nature may be produced. Pictures with such qualities are most rare on the walls of a photographic exhibition, but they are thoroughly appreciated. To those who are desirous, in landscape work, of producing pictures of the greatest novelty of treatment, we can only say, endeavour to produce pictures whose most pleasing characteristic is the due rendering of atmosphere.

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[*From Photographic News.*]

THE PRACTICE OF NEGATIVE RETOUCHING.

BY W. E. DEBENHAM.

No. 1.—Proper Use and Limits of Retouching.

The practice of working upon photographic negatives, called retouching, has now for many years been in almost universal employment amongst professional portrait photographers. This practice, however, has only too commonly been attended by such serious evils, that it is not to be wondered at that there should be those who have condemned it altogether. It will be well, therefore, before going into any detailed description of the methods to be employed in the execution of the work, to give some consideration to the question of the functions which retouching may properly fulfill, and of the limits which should be assigned to it.

In the first place, a legitimate use of retouching is to remove defects which belong either to the photographic process itself, or to imperfect manipulation in the working of that process. The most obvious and striking defect of the photographic process is that of rendering objects of certain colors disproportionately light or dark in comparison with their appearance to the human eye. This is particularly the case with the color yellow, which produces a very luminous effect upon our visual organs, and yet is, photographically, so inactive, that light of that color is used for the purpose of the illumination of the dark rooms, where the sensitive plates are prepared and manipulated. Not only does the human skin reflect a notable amount of yellow and red—also a photographically inactive color—but it is frequently covered in parts with patches or spots where yellow exists in considerably increased amount. The spots or patches are discernible to the eye, but even in daylight have commonally only a very slightly different luminous effect from that of the surrounding skin. By gaslight the difference is still less perceptible. When, however, such marks of yellowish coloration are reproduced by photography, they become so unnaturally evident as to produce a very unpleasing effect. To reduce such markings, whether they assume the form of freckles, of coloration around the eyes, or of a yellowish stain not unfrequently seen about the temples, to such an extent that they shall not be more strikingly evident in the photograph than they are in nature to the human eye, is an operation the legitimacy of which will not be questioned.

Another defect belonging to the photographic process, which it is the business of the retoucher to remedy, arises from want of perfect gradation. It is well known that after a certain amount of light has acted upon a plate, a further increase of light does not produce a correspondingly increased amount of action upon the sensitive film. The result of this defective action is that the highest lights in the photograph, when they lie upon lights that are themselves pretty strong, do not stand out with the crispness and relief that should belong to them. The strengthening of such lights up to the amount of brightness visibly belonging to them in nature is, therefore, another proper field for retouching. Unfortunately it happens that to do this successfully requires more artistic ability than is at all common, if we may judge from the manner in which the lights, say on the nose, or on the prominent parts of white lace, are depicted in so many of the published portraits to be seen in the shop windows.

The generally inadequate rendering of varying degrees of light at the other end of the scale—that is to say in the shadows—is another cause of defective representation by photography, the amelioration of which lies within the province of the retoucher. It must have struck many photographers that the shadows, for instance, on the flesh beside and partly round the eye, on the shadow side of the face, do not in nature approach for blackness the depth of color of the pupil of the eye, or even of the line of shadow of the eye-lashes; yet in many photographs these shadows are rendered not many degrees lighter, and the line of eyelash near the nose on the shady side of the face comes but little (if any) darker than the flesh immediately surrounding it, in which therefore it is lost. We certainly do sometimes see bright, well-exposed photographs, in which the flesh even in the shadows has a beautiful luminous appearance, more in accordance with its natural effect on the human eye; but such photographs are not too common, and the retoucher's pencil may be well called in, in the majority of cases, to remedy the want of gradation in the shading of the photograph.

In the instances hitherto mentioned, the work of the retoucher will be admitted on all hands to be legitimate, as removing defects incidental to photography. That improvements in the photographic processes will render such after aid less necessary or desirable than at present, may well be believed. We now come, however, to work the legitimacy of which may be questioned by some, but the necessity for which, in order to gratify the public taste and requirement, must be felt and provided for by professional photography. The office of that part of the retoucher's labor now referred to is the beautifying of the work, and the idealizing of the subject. Towards the accomplishment of the first of these requirements the production of the effect of a fine stipple is found to be singularly efficacious. Why this should be so it may not be worth while to spend much time in discussing; perhaps it has something to do with it, that the effect of massing is thereby favored; as details which might be obtrusive by interfering with broad general effects of light and shade are easily kept in subjection, if not altogether ignored. Stippling may, however, be used in the other direction, that of making the most of details to the detriment of the effect of massing. I have seen work mechanically beautiful in execution in which every small protuberance or indentation of the flesh has been rounded up, as though each had been the picture itself, showing much more prominently than in the original photograph; and the general effect of light and shade was thereby damaged, whilst the picture was distressingly hard and unreal. No manipulative skill can compensate for this style of work, which must be scrupulously guarded against, as being at the same time unreal essentially inartistic, and unpleasing.

It must be admitted that with the introduction of the practice of retouching, certain evils came into being in connection with the practice of photography itself. One such evil is, that a superficial smoothness, and what passes for prettiness, is sometimes spread over the pictures at the expense of resemblance, either to the sitter, or even to the ordinary characteristics of the human face. Another too common evil has been that the photographer is apt to depend upon the retoucher to make inferior work presentable, to give it a "finish," as the public call it, instead of relying upon excellence in the production of the camera. These evils are not necessary concomitants of retouching; in fact, the photographer who retouches his own negatives recognizes that the time and trouble required in making presentable a bad negative is much more than that which would be taken up in fulfilling the conditions necessary for the production of a good one in the first instance.

The question of how far a photographic portrait may be idealized is an open one. Let us take a case of idealization suggested by a sentence in the early part of this chapter. It was mentioned that yellowish stains and discolorations of the skin which showed stronger in the photograph than in nature, would show less in gaslight than in daylight. They would show less still in a yellow light, such as a slightly tinted globe would transmit. Is it not permissible in a portrait to idealize to the extent of representing the subject with these discolorations no more evident than they would be in the most favorable light? Another duty which the retoucher frequently has to perform, is to remove or soften the frowning effect which the strong light of the photographer's studio so often induces with persons whose eyes are very sensitive. The light, which is so much stronger than that of an ordinary room, will cause a contraction of the brows, giving an expression very different from that seen on their faces under other circumstances. To remove or reduce this contraction so as to furnish a portrait more resembling that which is generally presented to the friends of the subject, cannot be considered an illegitimate idealization. The successful portrait painter, however, goes considerably beyond such idealization as this. As to suppressing or toning down irregularities and blemishes in the skin, that is almost universally done by the portrait painter. Skillful retouching will effect this sort of idealization of the portrait, and if the public require idealized portraits, it is not the professional photographer's business to refuse to supply their requirements, but, if he can, to meet them in some degree, if not to the same extent that is done by the painter. To show how this may be done in a way that shall be pleasing, artistic, and as far as possible truthful, and to describe the details of the art of retouching in such a manner as shall make it attainable by any one possessing good sight, steady hand, industry, and some natural aptitude, will be the endeavor of the following chapters.

AN OLD PHOTOGRAPHIC CLUB.

BY COLEMAN SELLERS, E.D., M.I.C.E.

(*Concluded.*)

In recalling the time long ago when so much interest was taken in photography by the few members of this club, the letter-book for the years of greatest excitement is full of interest. It is not well to close the account of it without a single extract from the letters written by the founder of the club, Mr. Henry T. Anthony. No one of these interesting letters can be given in full, as each has matters relating to persons yet living and bearing no relation to the club. To the writer of these pages he was always willing to talk of his business as related to photography, and often the jealousies incident to rivals in trade called for comment from one who gave from his full store of knowledge so freely, and yet who was often called upon to defend himself when his ideas were stolen and made a source of profit to those who tried to sell his work as trade secrets. If ever the story of fuming albumen paper comes to be written, the letters the writer holds, not only from Mr. Anthony but from all who were concerned in the early use of Mr. Anthony's discovery, will go far towards settling his claim as the first to fume albumenized paper after it is silvered and dried. These many letters from him lie sandwiched between those from not only members of the club, but many of the giants in the art in this country and in Europe. As the American correspondent of the *British Journal of Photography*, one could not help hearing from many who learned of the doings of the young club through his communications to the *British Journal.* Two years ago, when the writer was once more in England after the lapse of a quarter of a century or more, his hearty welcome from those who had known him only through his connection with the literature of photography, showed that the work of the early writers had made a deep impression on the minds of those who yet hold the photographic art in active daily practice.

Visiting the Astronomer Royal, of Scotland, the card presented to him recalled those early days, and he had not forgotten one whose letters he had read so long ago. November 29th, 1861, Mr. Anthony wrote: "It is gratifying to me as proposer of the club, to find the proposition so favorably received as it has been. In the outset of all organizations, time is required to get all things in working order. The fact that you may not have received exchanges from all the members of the club, may be accounted for by the lack of a general understanding as to the time when the exchanges should commence. In my own case failure to 'come to time' is due entirely to the circumstance that, notwithstanding my intimate connection with photography for some years past, I have never yet been away from New York to take a negative. I was consequently unprovided, within a week of the 15th, with one of the essential bases of qualification for membership. I made an effort, however; and one bright morning I started out with my six dry plates, expecting fine results. Unfortunately, however, before I reached my ground the day was overcast and so dull, I could with difficulty draw a focus. Since that day I have not been able to leave my business to make another trial. In case I am obliged to send prints from one of the negatives I took on that occasion, I hope you will overlook any lack of vigor, and not consider it an evidence of my want of skill in photography. I shall endeavor to be more prompt in the next exchange. I shall forward with mine the print prepared by Mr. Haight. He is a young man about eighteen years of age, a mute, but a very good photographer. Please excuse any shortcoming in his first effort, and I will try to keep him hereafter." *En regle.*

"Very, &c."

The good man was always helping others and trying to keep them in heart when discouraged.

A few pages later in the same letter-book is one from the late Mr. Henry Greenwood, asking the writer to act as the American correspondent of the *British Journal of Photography*, and then began one of those long friendships that end only with life. He said he was happy to note that the war cloud was passing away. "I am glad to see that the amicable relations between your country and ours is not to be disturbed." After this many letters for the public to read were coupled with private correspondence, in which the attitude of England towards America during the great civil war was discussed.

That war, how it did hamper us in the photographic work, when gold was up far above double its value, and we had to pay dearly for every pound of silver used. The photographer of to-day scarce knows that he is using silver. During the days of wet photography our blackened fingers, as well as our depleted purses, told of the silver consumed.

Now and then a member of the club was called to the field, and then another would be too much engrossed in the war to think of making pictures. About this time Dr. Holmes writes under date July 6, 1862: "I know you will excuse my negligence when I tell you that I have neglected almost everything in the tremulous interest with which I have followed the fortunes of the army before Richmond, in which my first-born is serving as Captain. It has been almost impossible for me to think of anything except what is going on there. Nothing else should have prevented my acknowledging long before this the receipt of the interesting series of sterographs you sent me through Dr. Dean * * * * *. Then after several pages of talk about pictures, alluding to some he wanted, and that members of the club were trying to obtain for him, he says: "I ought to say I have a view of one of the entrances to Strasburg Cathedral, but I have never seen one of the spire which I ascended many years ago. The towers of Bologna must have been taken a hundred times, yet I never saw a sterograph or photograph of them or either of them.

"If it was not for this war I should begin selecting photographic apparatus tomorrow. If peace ever returns I feel sure I shall try my hand at the art, and then I shall be only too happy to send you some of my handywork in return for the many favors I have received from you."

With this letter came a charming stereograph of large Japanese quartz sphere, showing now, as I write, clearly as ever, the reflections of the objects in the room in which it was taken so many years ago.

Facing this letter is one from Thompson, in which he says Anthony and I had a day of it in the woods on the 4th of July. My wife went along and we had a good time in spite of the heat. Anthony carried his dry box with him and some milk plates, such as I used to work with a year ago. * * * I gave it up because I could not prepare the plates fast enough. Anthony brought home some tip-top pictures, and now I guess the club will hear from him—"at last!"

Letters from Mr. Anthony, in June of that year, were full of his milk process, and he sent to members of the club some cans of solidified milk of the kind he used in his experiments. With these gentlemen he talked freely of all his experiments, and interested them in aiding in the work of finding a plate that could be manufactured and held for sale. Once in commenting on some blisters with albums one complains of, he says: "What can you expect when one goes pleasuring with the camera on Sunday."

He was enthusiastic about the improvement to be made in tannin plates by fuming them with ammonia in the same manner as he fumed albumenized paper.

In one of his letters he discusses the making of composite pictures, such as Rejlander and others had been publishing. He sends two copies of these pictures for examination. Speaking of Rejlander, I see before me a letter from Mr. Henry Greenwood, in which he says: "I inclose you three card pictures (not samples of printing, for I have seen better prints from the same negatives, but these happen to be on my desk). They were sent to me by my friend Rejlander, with the quaint expression I send you a prince, a beggar, and a beggar and a half. They were the late Prince Consort, Rejlander himself, and a beggar boy, the latter taken for his Night Side of London. Poor Prince Albert gave his last sitting for a portrait to my friend Rejlander."

When I began these closing pages of the story of an old club, I was sure I had much to give of interest from the pen of its founder, but now I fail to be able to separate them from the great mass that part which would be pleasing to the public and instructive to the readers of the BULLETIN. The good man, the kind friend, the earnest seeker after truth, has gone, and his memory is fresh in the minds of all who joined their hands and hearts in friendship at the touch of his wand, when his personal magnetism drew together the elements of the first Amateur Photographic Exchange Club.

[*From the American Monthly Microscopical Journal.*]

CARBON LANTERN SLIDES FROM MICROSCOPIC OBJECTS.

By C. M. VORCE, *Cleveland, O.*

IN May, 1885, I published a carbon process for making lantern slides, which by later experiments I have learned is liable to mislead and which I wish now to amend, since the many letters and inquiries I have received is evidence that considerable interest in the subject exists.

It happened, entirely by chance, that in testing the process published as above, I used negatives made from slides of injected tissues, in which negatives the vessels filled with carmine had left the plate almost entirely unimpressed, while the transparent tissue substance had given a dense field. Silver prints from such negatives show but little else than the injected vessels standing out boldly on almost white ground. The result in making lantern slides from such negatives is that the sensitive film of gelatine is strongly impressed with the image of the injected vessels and remains soluble in all other parts, and a strong transparency of the vessels is produced.

With negatives showing tints and half tones, however, the above process will not succeed, for the reason that the whole field will print to some extent, and thus prevent washing out the underlying soluble gelatine. It becomes necessary therefore with such negatives, and is the preferable plan in all cases, to modify the process by what is called the single transfer in carbon printing. For this purpose the gelatine film is prepared upon paper instead of glass and is sensitized after drying. The proportions of the ingredients admit of wide variation, as also does the strength of the bichromate sensitizing bath. But the best results in any case are obtained by a certain relation between the composition of the film, the strength of the bath, the drying of the film, the exposure, and the development, just as is the case in silver printing and photographic processes generally.

For lantern slides great density is not desirable, but clear lights are imperative; hence the composition of the film requires consideration and the proportion of coloring matter is important. An approved formula is as follows:

Gelatine	150 grains.
White sugar	20 "
" soap	15 "
Dry color	6 "
Water	1 ounce.

The gelatine, sugar and soap are dissolved in the water and rubbed smooth; the dry color is moistened with water and ground on a paint slab until well mixed, then ground with a little of the gelatine mixture, and then added in portions to the melted gelatine mass and thoroughly stirred to incorporate all well together. The mass is then strained while hot through fine muslin and is ready for use.

The paper may be coated by drawing it over the surface of the melted gelatine mass; by spreading the mass on the paper; or by coating a glass plate with the mixture and spreading the paper upon this. In any case the paper must first be dampened with pure water. Spreading on glass gives the best gloss to the carbon surface, and is done as follows: A clean glass plate is coated with wax or rubbed with ox-gall and leveled, and the warm gelatine mass is poured on and quickly spread, as in making dry plates, air-bubbles of course being avoided or removed. The gelatine soon sets, and the damp paper is then carefully spread upon it, avoiding air-bubbles, and the plate is set aside for half an hour. A knife-blade is then passed under the edges, and the paper with the gelatine adhering is carefully lifted off, beginning at one corner. It is then hung up to dry, avoiding dust, and when dry will keep indefinitely. To sensitize it is plunged into cold water, and as soon as it becomes limp and flat is immersed in a bath composed of bichromate of potassium 2 parts, water 80 parts, for from three to five minutes. This sensitizing may be done in dim daylight or by lamplight, but the sensitized tissue must be dried in the dark, in a current of air if possible, and free from dust. When dry the tissue is printed by contact under the negative in the sunshine for about two-thirds of the time required for a print on silver paper, as the carbon tissue is more sensitive than silver paper. A photometer is of advantage, but a little experience enables one to print the carbon tissue without it, the time for printing on silver from the same negative being known. The tissue is not examined during printing, as the image is not visible. In printing it is necessary to use a mat or mask, which will protect the edge for one-fourth of an inch all round from the light.

To develop the print it is taken from the printing frame and placed in cold water until soft and flexible, when it is placed under water, face downwards, upon the cleaned glass on which it is to permanently remain, excluding air-bubbles, and on removal from the water is squeegeed into close contact with the glass by means of a rubber squeegee, and is set aside for about half an hour to drain. The glass, with adhering print, is now immersed in warm water at about 70 degrees F. for a few minutes, then into water heated to about 100 degrees F., and gently moved about until the black gelatine is seen oozing out around the edges of the paper, when the paper is lifted at one corner and carefully pulled off, under water.

The glass is now rinsed about in the hot water until the soluble gelatine is dissolved away, which is quickly done; or it may be held under a gentle stream of water at about 80 degrees F.; or suspended face downward in a bath of warm water and allowed to develop by itself. When developed sufficiently the prints are immersed in cool, then in cold, water for a minute or two, and then placed for two or three minutes in a three to five per cent. solution of common alum, to which, if cloudy, one drop of sulphuric acid to the pint of solution is added. From the alum bath the plates are given a dip in clean cold water to rinse them, and are then dried, covered with clear glass or hard negative varnish, and mounted for use.

Any lettering or numbering of parts, or a written title, may be executed upon the dry gelatine film with Indian ink by means of a steel pen before covering or varnishing.

The best coloring matter is carbon, and for black the best Indian ink is superior to any other substance. For tones bordering on black the following are good formulas:

PURE BLACK.

Dry Indian ink	1 part.
Gelatine	30 parts.

WARM BLACK.

Indian ink	15 parts.
Vandyke brown	2 "
Venetian red	2 "

And of the mixture one part to 30 parts gelatine.

DEEP BLACK.

Indian ink	20 parts.
Indigo	2 "
Carmine lake	1 part.

And of the mixture one part to 35 parts gelatine.

PURPLE BLACK.

Indian ink	5 parts.
“ red	5 “
Burnt umber	2 “
Indigo	1 part.

Use one part to 30 parts gelatine.

Pure levigated lamp-black alone may be used in many cases.

The printed tissue gains intensity after exposure, and hence must be developed soon after. The following facts should be borne in mind, to guide the various steps of the process. The bichromate bath should be weaker in warm weather or temperature than in cold, and should ordinarily not be used above 60 degrees F.; 40 degrees F. is better. The stronger the bath the softer the prints and more sensitive the tissue, but too strong a bath will ruin or even dissolve it. The sensitized tissue should be dried quickly, as slowly dried it is not equally sensitive in all portions; if too quickly dried it may crack.

Although the above directions may seem voluminous, the actual processes are speedily and easily carried out. The control of the operator over the character of the picture, and the cheapness, certainty and permanence of the result are not equaled by any other photographic process. In Europe the carbon process for portraiture, copying, enlargements, etc., is much more extensively followed than the silver process almost exclusively in vogue in America.

[*From the British Journal of Photography.*]

DAGUERRE.

Notes from a Manuscript written by M. MENTIENNE, *ex-Maire de Bry-sur-Marne, a Personal Friend of the Inventor of Photography. Kindly communicated to* Professor STEBBING *by* M. GLAISE.

LOUIS JACQUES MAUDÉ DAGUERRE was born at Corneilles en Paris, Seine et Oise, December 18, 1787. His father, a clerk in the Financial Department of the State, desiring to give his son an honorable profession, placed him, when yet young, under an architect. The youth manifested very early a decided taste for painting. His parents used their influence to divert him from this art, but in vain; his resolution to be a painter was immovable. His father, yielding at last to his great desire, apprenticed him to Degotis, decorator of the Opera. It was not long ere the young Daguerre made rapid progress in the art he had chosen. Important decorative work was confided to him, and he soon gained the reputation of being a talented artist.

He received an order for a theatrical scene for the l'Ambigu-Comique, and made a complete revolution in this style of decoration. His paintings for that theatre are still cited as *chefs-d'œuvre*—The Dream in the Chapel of the Castle of Glenthorn, De la forêt de Senart, etc. He then executed, in collaboration with M. Cicéri, the decorations of the wonderful lamp for the Great Opera; the magical effect of his rotating sun was remarkable. He assisted Pierre Prevost in the execution of his panoramas of Rome, Naples, London, etc. About this time he associated himself with the painter Bouton, for a moment a rival of Horace Vernet, in view of a panoramic establishment, in which light was made to act in order to give mobility to the effects as well as a charm to the coloration. This establishment was opened to the public on July 11, 1822. Here he offered to the astonished view of the spectators most admirably painted pictures, which, by the different effects of light, were made to pass from daylight to night, and from one scene to another. Renown spoke of a valley in Switzerland; Holyrood Chapel—this was so wonderful as regards painting, as well as scenic effect, that the Government decorated him with the Cross of the Légion d'Honneur (1824); the Abbey of Roslin in a Fog (which transformed itself into a snowstorm), the Fire of Edinburgh, the Deluge, View of Paris taken from Montmartre, the Tomb of Napoleon at St. Helena, Mont Blanc, the Black Forest, Midnight Mass at St. Etienne du Mont, the Temple of Solomon (this was his last production for his diorama, 1839). This exhibition gained for its author universal renown; foreigners came from afar in order to witness such a novel and wonderful sight.

Master of his art, Daguerre produced by his perspective the most complete illusion; darkness to light, as well as all the atmospheric variations, were scrupulously represented. All at once the spectators were carried, as it were, into the center of an immense cathedral—the arched roof, the immense pillars, and the colored glass windows admirably portrayed ; perspective had created space with striking reality. Then the admiring sightseers were shown a landscape lighted up by the silver beams of the moon, a castle hidden in the shade of a grove of trees, the heavens beautifully decorated with silver and golden tipped clouds. As a type of these changing panoramas must be cited the famous Midnight Mass, seen at first by daylight, then during the night service. This change was obtained upon the same picture, and without removing it in the least.

On the 3d of March, 1839, a fire devoured these *chefs-d'œuvre*, and many others having a great artistic renown and value. This was, indeed, a misfortune. From that time up to the present day no establishment of the kind has been got up.

Through this inauspicious event the fortune of Daguerre was very much curtailed. He continued nevertheless to occupy himself with the different effects to be obtained by light. Since 1834 he had been seeking to fix the image obtained in the camera obscura. This idea had been ridiculed by all those he had spoken to on that subject, with the exception of the eminent chemist, J. B. Dumas, *l'illustre savant de l'Académie Française*, who gave him every encouragement to continue, and prognosticated his future success. In fact, as a recompense for the loss he had sustained by his fire, towards the end of April, 1839, he discovered the means to fix the reproduction of nature by means of light.

Henceforth an immense fortune appeared to lay beneath his grasp. Brilliant offers were made to him by foreigners for the purchase of his secret. England, which is never behindhand, offered him £10,000 sterling and an annuity of £1,000. Prussia and Russia made him most brilliant offers. The United States offered to give him whatever he might demand. But Daguerre was resolved to give the honor of his discovery to his native country. The statesmen of France voted him unanimously a national reward in the form of a pension for life.

By a deed executed before a notary, signed June 15, 1839, he took the solemn engagement to reveal the process he had discovered to obtain proofs by the aid of light, as well as to publish the means he employed to obtain such admirable effects in his dioramas. For this abandonment of his invention he was to receive from the State the humble pension of £240 per annum. The Government decorated him Officer de la Légion d'Honneur; the King of Prussia sent him the Order of Merit; the Emperor of Russia sent him a handsome present; the Universities of Edinburgh, Vienna, Munich and New York sent him the diploma of honorary member of their respective colleges.

Daguerre, desiring to rest a little from his labors, purchased a charming villa in the hamlet of Bry-sur-Marne. He occupied himself in embellishing his dwelling, and there he spent, with his worthy and respected wife (Louisa Arrowsmith, an English lady) and his niece (not having any children of their own) the happiest portion of his life. At the same time he did not neglect his taste for scientific subjects. Probably to please the priest he took it into his head to decorate the humble village church. Behind the high altar he prepared a canvas frame nearly five yards square, lighted from above. Upon this he painted one of his very effective pictures, the only one left which can give the visitor an idea of what his diorama was before its destruction.

The decoration represents a Gothic edifice from the *jubé* to the choir. This changes totally the aspect of the little village church, giving it the noble and majestic appearance of a cathedral. The visitor remains in wonder and admiration, looking at the numerous details of that holy scene. The curves of the arch work are so exquisitely rendered that the air appears to float among the pillars and the breath of prayer whispers among the arched buttresses. Spiders' webs can be seen hanging from the acanthus of the chapiters. In the foreground, Christ upon His Cross appears about to descend. On the other side a wax taper is represented as being just extinguished, wafting its slightly curled and transparent smoke towards the skies, leaving the wick glowing red. Many other details could be mentioned, which when touched are but optical illusions! By this last piece of work Daguerre appears to have left a pledge of his friendship and high esteem for the inhabitants of Bry-sur-Marne.

During his retreat he occupied himself with his favorite studies. He became a member of the Free Society of Fine Arts, established in 1830, and assisted very regularly at their meetings. It appears he sought diligently to obtain instantaneous results for his photography. In the year 1884, at the meeting of the Free Society of Fine Arts held on January 30th, he communicated his hopes that he had found a new chemical of which the sensitiveness was so instantaneous that he intended to make the portrait of a horse at full gallop. "The effect is so prompt," said he, "that I can only compare its rapidity to the velocity of the electric spark." Daguerre was very particular and diffident as to the perfection and easy application of his inventions. Perhaps he did not attain the success he desired as to rapidity, for at his death nothing could be found relating to this subject, which appears strange and unaccountable.

He endeavored to bring designs in pastel to perfection by seeking a manner to fix the color upon its support, so as to do away with the protecting glass which was necessary at that time. It appears he met with many difficulties in order to preserve the velvety appearance so precious in that kind of drawing.

At the moment when death knocked at his door he was occupied with a new process of monochrome painting on glass, to be seen by reflection. The glass replaced the best varnish, and gave a highly glazed appearance to the finished picture. The specimens he left are painted with black paint, very vigorous indeed in tone. The half tones are obtained by means of the semi-transparency of the coating, this coating being more or less thick, according to the taste of the artist. A coating of white to finish up gives depth of shadow. Several landscapes executed by this process were terminated, and one nearly finished was found upon the easel. As to the mode of production and preparation it can only be surmised, as nothing was left by him on the subject.

Although busy in study and science he was not above rendering service to the inhabitants of the village he had chosen for his retreat. Advice and help were not withheld from those who had chosen him to represent them on the Municipal Council.

He received many visits from strangers and foreigners. Photographers and artists came even from America, among them Messrs. Meades, who took the portrait of the master they came to honor with the intention of reproducing it on the other side of the ocean, to make the features of the celebrated artist known to their countrymen.

He was very friendly with Mlle. de Rigny, niece of the Baron Louis de Rigny, the great banker. This lady was owner of the greater part of the village, very learned, and at the same time advanced in science. Daguerre found great pleasure in her society.

In 1848, during the great Revolution, the inhabitants of Bry were in the greatest distress. He occupied them in the park of Mlle. de Rigny in making a miniature representation of Switzerland. Mountains, rocks, old castles, ruins, lakes, bridges, etc., all were represented on a large scale. A double object was here obtained—an artistic work was accomplished, and the workpeople were prevented from frequenting the national workshops, where bad doctrines were inculcated rather than honest work counseled.

Daguerre died suddenly on July 10, 1851, in the prime of life. A few days before his death he took part in the work of a commission *des Beaux Arts*, and nothing could prognosticate that his end was near.

His loss was universally regretted. When the sad news reached the New World the photographers there sent addresses to his widow, expressing the deepest regret for her bereavement. In order to show their admiration and acknowledgments to Daguerre, they wore mourning during eight days, in sign of sorrow for his loss. A sum of £2,000 was collected to build a monument to his memory at New York, so as to show to all nations that the American photographers admired and appreciated the invention of Daguerre.

The mortal remains of this great artist repose in the cemetery of Bry-sur-Marne, where a monument has been erected to his memory by the *Société Libre des Beaux Arts* in the midst of those he loved, surrounded by his friends, which he considered as belonging to his own family.

M. Glaise writes me to-day, "The monument is in stone, two and a half yards high. In the center is the bust of Daguerre. The inscription is :

A.
DAGUERRE,
La Société Libre des Beaux Arts.
MDCCCLII.

"On the back of the stone is the date of his birth and death, also that of his wife, who survived him six years."

* * *

[*From the Photographer's World.*]

PHOTOGRAPHERS LOST IN THE CAUCASUS.

Everyone who takes an interest in photography will learn with regret of the loss of Mr. W. F. Donkin, M.A., the respected secretary of the Photographic Society of Great Britain, with his friend, Mr. H. Fox, and two Swiss guides. All that is known up to the time of our going to press is contained in a letter from the President of the Alpine Club to the *Times* of October 6th, the substance of which we give below:

"There is, unhappily, no room for doubt that two English mountaineers and two Swiss guides have lost their lives in the Caucasus. The two Englishmen are Mr. W. F. Donkin, the well-known climber and photographer of the high Alps, and Mr. H. Fox, of Wellington, in Somerset; and the two guides are Johann Fischer and Kaspar Streich, both of Meiringen, in the Canton Bern. This party had undertaken to explore some of the remoter regions of the central Caucasus, and had obtained the sanction and encouragement of the Russian Government for that purpose. They were last heard of alive on the 30th of August, at a place called Karaoul, near Balkar, in the valley of the Terek, whither they had gone after halting for a while in the village of Bezingi, near Naltshick. An interpreter who accompanied them as far as Balkar was ordered to wait their return to that place in six days, and in the meanwhile the party proceeded to explore a pass or peak in the neighborbood. A heavy snowstorm came on soon after their departure, and they have not since been heard of or seen. The interpreter waited for three weeks, surmising that they had changed their route and plans, and then informed the authorities of their disappearance. Search parties have since been sent out and have prosecuted an active, but so far an unsuccessful, search, assisted by an English officer well acquainted with the country, people, and language. The latest telegram from this officer, which was received yesterday, states that traces have been discovered on a glacier of which the name cannot be made out. What seems to be now only too clear, is that the whole party has perished.

"The two travelers were mountaineers of experience, skill, and prudence, and their guides, who were specially selected for the expedition, though comparatively young men, enjoyed a high repute among Alpine climbers. Mr. Donkin was no stranger to the Caucasus, having accompanied Mr. Dent two years ago in an expedition to the district in which he has now perished. He was the son of the late Savilian Professor of Astronomy at Oxford. Though not his father's equal in academical distinction, Mr. Donkin had made a name for himself in scientific studies and held the Professorship of Chemistry at St. George's Hospital. He was an accomplished photographer, his well-known photographs of the higher Alps being quite unique in their character and excellence. His companion, Mr. H. Fox, was a young man of great athletic promise. He was a member of the Somerset county eleven, a leader of the county football team, and he had already acquired a high reputation among mountaineers as a climber of great skill and daring, combined with a due mixture of caution. The untimely death of two such men is a sensible loss to the community.

OUR ILLUSTRATION.

We have again had the good fortune to secure for our illustration some gems of photographic study from the Studio of Mr. Dana, of New York. As examples of fine modeling, artistic management of lighting and posing, and general excellence of the many details of photographic manipulation, they are beyond question in the highest rank of our art. Mr. Dana's fame is not a local one, and his painstaking work and tireless endeavors to please are highly appreciated by a large circle outside New York City, who consider one of his portraits as the best substitute for the presence of those near and dear to them. The fine example of his work which we give with this issue of the Bulletin is worthy of study by all our readers.

POSTAL PHOTOGRAPHIC CLUB.

To the Editors of the Bulletin :

It is sometime since we heard anything of the "Postal Photographic Club," which I consider was a splendid institution for amateurs. Are there not any amateurs in this vast country who feel that it was a benefit to them; and who are willing to start a new club, or I should say bring to life the old one. They have the same kind of club in England, which is still flourishing; it started over four years ago. I am willing to help and I have some friends here who would join. I shall be glad to hear from amateurs on this subject. And I will only be too glad to be secretary, as my time is not employed like some others are; and I will give the first album towards the club being started again. I will be greatly pleased if I can hear from other amateurs sending prints and data as usual.

Asking forgiveness for trespassing on your valuable space,

I remain yours, very truly, Thomas Mansell.

Chester, Chesterfield Co., Va.

I now have the bound issues for 1885 and 1886, and the numbers for 1887, lacking this one. I cannot well afford to lose it, for I wish them bound for the many good things they contain, and the interest I take in looking them over.

Frank J. Goodavent.

I can honestly say that as an instructor it is equalled by few and excelled by none ; it has helped me out of many a trouble and may help out of many more.

I enclose check for renewal. Permit me to say that I enjoy the Bulletin exceedingly and could not do without it, and trust it may always be forthcoming.

S. S. Webber.

ANTHONY'S
Photographic Bulletin.

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Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.
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Advertisements should reach us not later than the Saturday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, six, twelve or twenty-four issues.

E. & H. T. ANTHONY & CO., Publishers.

AMERICAN INSTITUTE—PHOTOGRAPHIC SECTION.

INFORMAL MEETING, OCTOBER 17, 1888.

The Vice-President, J. B. GARDNER, in the chair.

The Chairman, after calling the meeting to order, said: "As no special subject has been selected for the evening, it would be in order for any member to introduce such themes as might in any way aid the photographer in his work."

Mr. DUCHOCHOIS then referred to the subject of the previous informal meeting, and said: "In regard to the making of lantern slides, it was his belief that those made by the albumen process had never been excelled; but it was a difficult process, as he had proven by manifold experience, and hence believed it would seldom, if ever, be practiced as in days of yore.

"For all practical purposes, the gelatine emulsion and the collodion wet plate were quite good enough, though he believed the latter could be made to produce better work than was possible with the former. In this respect, he said, he harmonized with a majority of the dealers in lantern slides, and would, therefore, certainly practice the wet process if he were making slides for the trade."

The next subject introduced was "Lighting and Posing," with all the different opinions expressed in regard to this branch of photography. It was agreed that, as a rule, too little attention had been given to it, hence there were a countless number of portraits made, that were neither elegant nor truthful. That positionists, often without thought or care, used the same lighting and the same view of the face, whether their subject was of a florid or dark complexion, whether young or old, whether a thin figure or a portly one. All were seated in the same chair, and precisely in the same place under the skylight, directed to look at the same object, and very blandly requested to keep still and look pleasant. This last advice, if followed, usually increased the lines of the mouth and so contracted the eye-brows that not one portrait in twenty ever proved perfectly satisfactory. Surely then, said the speaker, such advice would be "more honored in the breach than in the observance."

Mr. O. G. MASON suggested that some effort be made on the part of the members of the section to secure the attendance of our leading positionists, and at the same time provide a collection of pictures for special criticism, that reached from the highest to the lowest grade of excellence. In this way much practical information might be gained, while at the same time, it might bring to the surface individual faults most likely to escape the notice of those who had committed them.

The Chairman gave a brief sketch of a gentleman, now dead, who for a number of years had a photo gallery in one of the most crowded portions on the east side of the city. It was a locality, he said, where filth and poverty stood out in bold relief.

In this gallery there was a remarkably small skylight; the width of the room was about 7 feet, and the length perhaps 12 feet. Beside this, there was a small waiting-room fitted up in a manner that made its patrons feel quite at home; there was no fear of soiling upholstered chairs or velvet carpets; everything was on a par with their own homes, and this home-like air was one of the secrets of this artist's success; that he was successful, the courts attested after his death by a two years' siege in deciding to whom his property belonged; and, like many suits in chancery, finally bestowed it on those to whom it never had been willed.

It is doubtful, said the Chairman, if you could find another gallery in the city that could boast of such examples of lighting and posing. And all this was brought about by the natural aptitude of his patrons, and by simply sitting every customer, whether old or young, large or small, in an antiquated chair that was solidly nailed to the floor, with the camera permanently stationed by the side of the dark room, in which there was a sliding window, through which the plate-holder could pass to its place in the camera. From this point of view every picture was taken, so that the larger the subject, the less of the person there would be taken. And as only one sized plate was used, it might embrace a half-length portrait, if the subject was not above the medium size, or it might be a full length if taken of an infant.

From these pictures, it could be accurately determined the relative size of one subject with another, as well as the exact height of each. In this respect it was a step in advance of other galleries, and in this regard is no doubt worthy of serious consideration.

The moral of all this is, that in a city like New York there appears to be room for low art as well as high, and for every grade of talent.

The subject of retouching was also alluded to, and while it was regarded as a means of increasing the attractiveness of a picture, it was urged, that it often lessened its value as a likeness, and should, therefore, be used with much caution and skill.

The fading of silver prints was also alluded to, but no definite means of curing this defect could be agreed upon. Mr. Duchochois believed that one of the causes might be fixing the prints without taking the precaution to exclude them (while in the hypo solution) from a strong light. He believed, also, that there was a salt of silver formed in the paper that hyposulphate would not dissolve, and that this would, in the course of time, have a tendency to injure the picture.

Mr. GARDNER believed that pictures were often injured by keeping them a long time in the fixing solution (with the view of correcting overprinting), after the chloride of silver had been dissolved. He believed in using not more than six ounces of water to one ounce of hyposulphite, and subjecting the solution to as little light as possible while the prints were being fixed. He believed not only in the rapid fixing of prints, but also in a quick method of washing them. He thought it was a mistake to account for the fading of prints, as we often do, by simply saying: "They were not sufficiently washed."

"To confirm this opinion," he said, "I fixed a number of prints, and then simply soaked them in a weak salt solution for ten minutes. They were then dried and rolled up with others that had been washed in the usual way. More than a year has since passed, and no symptoms of change are manifest in these unwashed prints. How much longer they will remain unchanged, time can only tell!"

It was proposed that the Executive Committee be requested to select some definite subject for the next meeting, and duly notify the members of the same.

The section then adjourned.

[*From the Photographic News.*]

HOW TO MAKE LANTERN SLIDES ON GELATINO-BROMIDE AND GELATINO-CHLORIDE PLATES.

BY I. H. JENNINGS.

(*Continued.*)

The 3¼-inch square camera is very useful for making slides by copying from large negatives, and in the case of those generally working with a large camera is to be preferred; but for those who desire a light and portable apparatus, or who take negatives specially for lantern slides, the quarter plate camera is to be recommended, as the margin of the plate can receive a description label without intruding on the part to be printed from, and also provides against accidental defects, such as frilling, which in the smaller negative would spoil the picture. Such a camera will serve as a most pleasant companion on a hot summer day, when a larger one would only tend to spoil the photographer's enjoyment by its bulk and weight; and by reason of its long bellows, will serve for photographing both near and distant objects in a satisfactory manner if provided with suitable lenses. For lantern work a long focus quarter plate camera may be called a "universal camera," as it will be found by far the most convenient instrument for copying book illustrations, some of which have to be reduced in copying, but also at times enlarged, and this the long bellows provides for.

Three or four double dark slides should be provided, whether the object be landscape work or copying book illustrations, for it saves much time and needless labor to be able to copy six or eight engravings as fast as they can be focused, without having to journey to the dark room to change plates.

The whole apparatus, camera, slides, and lenses, ought to be kept, when not in use, either in a dust-tight box, or in one of the neat leather cases made by most manufacturers of photographic apparatus, and not left about exposed to dirt and dust. No apology is made for this suggestion, because such matters are wrongly deemed "trifles" by many; and the man who is markedly careful of his apparatus is considered "faddy" or eccentric. Yet if dust and dirt be "matter out of place" in an ordinary camera, they are tenfold more so in a camera or slides devoted to lantern work; for blemishes that may pass unnoticed on prints on albumenized paper, or be easily touched out, will simply ruin a lantern negative or positive.

It is hardly necessary to observe that a series of lenses is very desirable, both in landscape work and copying book illustrations. In landscape work it is frequently found to be impossible to get the camera in a suitable position, if fitted with only one lens; the camera is either too close to include the view on the focusing screen, or so far off that the image is too diminutive. These difficulties are surmounted at once by the possession of three or four lenses, preferably doublets, the components of which can be used singly, thus giving twice the focal lengths of the combination, and permitting distant objects, such as ships, mountains, etc., to be photographed with distinctness and of sufficient size. These lenses should either all fit in the same flange, to avoid the nuisance of extra fronts or adapters, or the same mount, the very acme of portability.

Of late years, owing to the revived interest in photography caused by the introduction of gelatine dry plates, and the consequent large increase in the number of workers, much so-called "cheap" apparatus has been introduced, some of which is of fair quality, and capable of doing good work in careful hands, but most of which had better be avoided by all who intend really to work at photography. In these cheap cameras many essential features of a good instrument are omitted, to enable the apparatus to be sold at a low rate. Thus few of these possess a rising front, and this is absolutely necessary in a camera intended for lantern work, whether landscape or copying. The swing back, although important, can be dispensed with; but, if possible, both these additions should form part of every camera intended to be used for the production of lantern slide negatives.

In addition to having a bellows extending to eight or twelve inches, the camera should be capable of being racked-up close enough to work easily with a wide angle lens of as short a back focus as $1\frac{3}{4}$ inches; for such a lens will be found indispensable for photographing buildings in confined situations, or mountain scenery, where the camera has often to stand, perhaps at the bottom of a narrow ravine, close to the object of interest. Such range of adjustment will hardly be found in any cheap camera, although all these features are provided in cameras made purposely for the requirements of the lantern worker.

III.—TAKING LANDSCAPE NEGATIVES FOR MAKING LANTERN SLIDES.

In speaking of apparatus we have mentioned the necessity of having a series of lenses in taking landscape negatives from which lantern slides are to be made; for it is not always—and, indeed, not often—possible to bring the camera nearer, or remove it further away, to secure the exact picture desired. The first thing to be done is to choose what the photographer considers the best point of view. Whether it will be so or not will depend entirely on his amount of artistic taste and judgment. In taking buildings, unless it be the only possible position, do not plant the camera right in front of the building, for you do not want an architect's "elevation" of the building, but a pleasing picture. To obtain this, place the camera in such a position as to command a view of the building at an angle, and, above all things, let there be sufficient, but not too much, foreground. There should be enough foreground to give the appearance of stability to the building, for if its base be close to the bottom of the picture it will look very funny on the screen as a lantern slide; and do not try to get the building as big as possible, but try to include other objects that harmonize with the principal object of interest. Such advice might appear needless, were it not for the fact that the writer has seen certain photographs exhibited with innocent pride by amateurs who were not exactly beginners in the art, in which the sole effort seems to have been to place the camera right opposite the front of the building, and take a view as large as could be included on the focussing screen.

(*To be Continued.*)

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this. No attention will be paid to anonymous communications.*

Q.—R. W. writes: Please instruct me through the BULLETIN in regard to the following difficulty: In developing dry plates with hydroquinone, there remains a white, dull haze on the back of the plate, which the fixing solution fails to remove. And it does not give a clear printing negative?

A.—The difficulty is probably some impurity in the hydroquinone, or comes from using bad water. If you could send us a small negative, or a piece of the negative, we might help you better. We do not see why you cannot rub the haze off the back of the plate while it is wet.

Q.—S. B. V. E. writes: In the BULLETIN for August 25th, Dr. Vogel, in his letter gives a formula for hydroquinone developer, using 5 grams of hydroquinone, 900 grams of water, 40 grams of sodium sulphite, and 75 grams of potash. Please give this in grains and ounces, and tell us what kind of potash. Also, in the talk before the convention on "Dark Room Practice," the author, for an intensifier, used mercury bichloride mixed with potassium bromide—what strength should these solutions be?

A.—Five grams = 78 grains.
900 grams = 30½ fluid ounces.
50 grams = 1½ ounces.
75 grams = 2¾ ounces.

The potash named is potassium carbonate or salts of tartar. We do not know exactly the formula referred to above, but a solution of mercury bichloride that is half saturated (one volume of saturated solution to one volume of water), with an equal weight of potassium bromide, is often used.

Q.—A. C. J. writes: Will you be so kind as to tell me through the BULLETIN if sensitized albumen paper, kept four or five days in safety cans, has to be refumed, or should it be put in cans without fuming, and will it keep white longer? Mine turns yellow in that time. Can an instantaneous view be taken with a Darlot Portrait Lens, or will a view lens be better, Darlot make? What developer is best to develop instantaneous work? Will you give me a good formula for negative varnish? Also, is the Zephyr plate-holder made in size 3¼ x 4¼, and what is the price? How can I remove green fog from negatives? How can I find the speed of a drop-shutter or any other shutter?

A.—You should not fume sensitized albumen paper if you wish to keep it white in safety cans. And always fume it just before you use it, even if it has been fumed the day before. Instantaneous views can be taken with portrait lenses, but the pictures are never correct; use view lenses. Use the developer the formula for which is given in the box of dry plates you use; begin by adding as much water as there is developer, and then finish in developer of full strength. Good negative varnish cannot be made on a small scale; it is better to buy it ready made. Write a separate letter to our publishers about the Zephyr plate-holder; we cannot answer questions about sizes and prices of apparatus. Green fog may often be removed by rubbing the negative, after drying, with a soft rag moistened with alcohol. If this does not work try clearing in:

Saturated alum solution	2 ounces.
Hydrochloric acid	1 dram.
Water	1 ounce.

Don't leave plate in solution more than a minute, and wash well. In regard to the speed of drop-shutters, there are a number of methods for ascertaining this; see BULLETIN, Vol. XVI, page 232, for one method; the details are too long to reprint in these columns.

Q.—E. J. C. encloses two prints and writes: I have not been working at photography very long and would be pleased to have your opinion of the enclosed prints.

A.—The prints are good. The posing is poor. In the case of the girl, the head is thrown too far forward, and the boy looks like a being without a neck. This is probably due to tilting the camera too much and not using a swing-back.

Q.—Q. T. M. writes: Through the BULLETIN could you answer the following queries: 1. If I have a photographic lens, single combination, of exactly 8-inch focus, that defines a disc 4¼ inches in diameter, what is the angular aperture of that lens, also its angle of view? 2. When I introduce diaphragm F. 32, how have I affected the angle of aperture, and angle of view, from the condition of F. 8 or the full aperture?

A.—The angular aperture of a lens is the angle formed by lines cutting the margins of the lens and centering in the picture on the ground glass. The angle of view of a lens is the angle formed by lines cutting the margins of the view on the ground glass and centering in the lens itself. Using a diaphragm diminishes the angle of the aperture; but not the angle of view; the picture has better definition.

Q.—A. writes: A great many of the foreign prints brought to me to be mounted have a very brilliant surface and lie quite flat, having the appearance of being burnished. Of course, on being wetted for mounting, all the "shine" is taken off them and out of them; but as I am desirous of placing some prints in a book without mounting them, I shall feel much obliged if you will kindly tell me how to give them this brilliant appearance?

A.—Use a plain card behind each print and burnish in the ordinary way, lightly sponging the face of each print with an alcoholic solution of castile soap.

Views Caught with the Drop Shutter.

We regret to note the death of Mrs. Annie Rorbach Fisk, the wife of Mr. A. D. Fisk, of New York. After an illness of over three months, she passed away on October 17th last, leaving a devoted husband and four little children to mourn her loss. Mr. Fisk has our sincere sympathy in his great bereavement.

As we go to press we note another accident from the explosion of flash-light powder. The victim this time was John Crine, in the employ of Wylie & Wallace, of Philadelphia. While carelessly handling a keg of flash-powder it exploded, and he died from his injuries. If this is going to be the record concerning flash-powders, the sooner we see the last of them, the better. Why not use pure magnesium powder alone?

We regret to learn, from the *Buffalo Express*, that Mr. David Tucker, of the firm of Tucker & Butts, met with a serious accident lately. By making a misstep he fell down the stairs in their new building, and received injuries that were quite severe but not dangerous. We understand he is now much better, and tender our congratulations on his lucky escape from anything more serious.

Mr. G. G. Rockwood, the well-known New York photographer, gave a lecture before the Young Men's Christian Association in New York recently. It is needless to say that he had a large audience and entertained them with his pleasant manner of discoursing upon photography, and some of its applications. The lecture was beautifully illustrated with a large collection of pictures, etchings, etc., and Mr. Rockwood took a flash-light picture of a boy upon the platform before the whole audience, and finally made a picture of the audience itself.

Mr. W. A. Simpkinson of the firm of Sheen & Simpkinson, Cincinnati, recently came East on his bridal tour and gave us a call. We were glad to meet him, and regret that we could not have the pleasure of personally congratulating his bride as well as himself.

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A Fruitseller.

ANTHONY'S
Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

NOVEMBER 24, 1888. Vol. XIX.—No. 22.

THE PHOTOGRAPHIC EXHIBIT OF THE AMERICAN INSTITUTE FAIR.

EVERY year we go to this exhibition of photographs with our hearts full of hope that the management has done something to make the display of photographs worthy of the great city of New York and her many fine photographers. But we are always doomed to disappointment. It is a shame that from amongst the hundreds of studios in and around this city, scarcely a dozen of them are represented. As we have said before, we cannot help giving these our most hearty congratulations for their patience and enterprise in sending each year some examples of their best handiwork. But these men would be stimulated to higher endeavor if more competition was encouraged; and other competitors would also rise in the scale of excellence in their efforts to reach the status of the best workers. There is something radically wrong in the management of the photographic department of the American Institute Fair. There are two well-organized photographic societies in New York City, there are two or three more in Brooklyn, and at least one in several of the suburbs of New York, and not to speak of the societies in the larger cities of the State. Is it not possible to get an exhibition of photographs out of all these resources? Again, the American Institute has a photographic section, a society for the advancement of photography, which is a part of its own organization, and yet we seldom or never see pictures made by its members at these annual fairs, in spite of the fact that some of its members are acknowledged experts in the art. We think it is time this lethargy on the part of the management of the fair was dispelled, and we most emphatically raise our voice to rouse those in power to a better ordering of the photographic exhibition. There can be no cry of not having room for more pictures; for upstairs in the gallery of the Institute Building we noted a large amount of space entirely unoccupied, that could well be utilized for some of the less important exhibits, such as potato smashers, tinware cleaners, jig-saw puzzles, and other things that now usurp the space upon the ground floor. We understand that the object of these fairs is to elevate the taste of the people and make them acquainted with the growth and development of industry, art and science. Surely, the photographic art could not be better promoted than by a representative exhibition of the photographic progress of

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each year. Yet, in the exhibition this year there is but one exhibit that represents a single step of progress in our art, we refer to Mr. Kurtz' beautiful reproductions of oil-paintings by the use of color-sensitive plates. There is not another large city in the United States having an annual fair that makes such a miserable effort to obtain a photographic exhibit as the American Institute. Chicago, St. Louis, Cincinnati, Philadelphia, Baltimore, Boston, all have collections of photographs at their annual exhibitions that are at least twice as large as those shown at our New York Fair, and many times more interesting in that they show the progress of recent developments in our art. We sincerely hope that next year something more will be done to make the photographic exhibition more worthy of our great city and her photographers.

We must now say something about the exhibits of those men who have had enterprise enough to send examples of their skill to this year's fair.

Pach Brothers have a fine collection of their College Groups, a field of photographic work they have made entirely their own. Yale, Amherst, Columbia, Princeton, Wellesley, and a number of others are shown; marvels of clear work, beautiful grouping, and evenness of printing that cannot be excelled. One particularly fine group is the boat club of Wellesley College, the crew being taken in their eight-oar barge just off shore; a perfect gem of its kind.

In this exhibit we also noted some very fine interiors in the Metropolitan Museum of Art, including pictures and statuary, full of fine detail, large and handsome prints. Another set were the Bronze Rooms at Tiffany's, a most difficult task in photography, and yet beautifully done, every piece of metal standing out in marvelous solidity.

Here also we saw some fine life-size portraits; Mr. J. G. Blaine, General Hancock and others, all speaking of careful photographic manipulation.

We cannot leave this exhibit without a word about the interesting set of pictures illustrating Harvard Amateur Theatricals and Greek Plays. Those of our readers who go to the fair should not forget to see these, they are admirably caught.

Wilhelm has a collection of large heads, having many points of excellence and showing a steady progress over former years. We wish this artist would give us more variety in his exhibits; we feel sure he could show some good work in other photographic fields besides portraiture.

Fredericks has his usual large display of large portraits of celebrated men. We noted some very fine ones; ex-Secretary Manning, Chauncey M. Depew, Cornelius Vanderbilt. His children's groups were also very good. Here also a greater variety of work would materially add to the interest of the exhibit, even if it did not speak more for the skill of the artist.

Parkinson, who is also in the front rank of New York photographers, has a fine collection of life-size heads, and an excellent display of cabinet work. A composition picture of an old lady and child, after the picture "I'll take care of you, Grandma" (we believe is the title), is beautifully done, and we wish Mr. Parkinson would do more of such work.

In our next we shall have something to say about the other exhibits.

◆

I can honestly say that as an instructor it is equalled by few and excelled by none; it has helped me out of many a trouble and may help out of many more.

MILES HARRIS.

EDITORIAL NOTES.

We note that a Photographers' Association has recently been organized in New Orleans, at the establishment of S. T. Blessing. The objects of the association are self-protection and the promotion of the art of photography. Those present were Theodore Lilienthal, Eugene Simon, L. Robira, C. H. Adams, W. W. Washburn, Thomas Pye, Gustave Moses, C. T. Yenni, Bernard Moses, A. Roth, Eugene Massicot, C. T. Schenk, A. Daliet and S. T. Blessing. Mr. Blessing was elected temporary President and Mr. A. P. Harrington temporary Secretary. All the photographers of New Orleans have been invited to join the association.

Our suggestion about printing formulas for developers in the metric as well as in the English system of weights and measures, has been generally approved by our contemporaries. We also note with much satisfaction that Mr. Cramer, of dry plate fame, now issues his formula for developing printed in both systems. We think that these formulas would be still easier to understand if the figures were given for grams in one hundred cubic centimeters of solution. It is then very simple to multiply them by ten to get grams in one litre or indeed any other larger quantity, and by using the small measure a quantity sufficient for any amateur work can be readily made up. We would remind our readers that metric weights and measures are just as readily purchased, in all our large cities, as those of any other denomination. We can also assure them that after using them a little while only, they will be found so simple to calculate they will never be abandoned.

We have before us a handsomely printed copy of the address of Colonel V. M. Wilcox, of the firm of our publishers, which he gave at the first reunion of his regiment, the 132d Pennsylvania Volunteers, at Danville, Pennsylvania, September 17th last. It is embellished with a fine portrait of the gallant Colonel as he appeared in 1862, and also a picture of the trenches after the battle of Antietam, showing the Confederate dead that fell before the 132d Pennsylvania Volunteers. The pamphlet also contains Colonel Wilcox's report of the Battle of Antietam; a short record of his military career; a history of the 2d Army Corps of the Army of the Potomac; and a history of the Pennsylvania Volunteers. Altogether it is a most interesting contribution to the history of one of the most gallant regiments that fought on the dreadful field of Antietam. The portrait of Colonel Wilcox is from a negative by Chase taken in 1862, and the view of the trenches is by Gardner.

We have received from Mr. O. P. Scott, of Chicago, several prints from negatives of those magnificent life-size portraits that won for him a grand prize at the Minneapolis Convention. They must be seen to be appreciated, and if any of our readers would like to see them, they will find them framed and adorning our office.

The social reunions of the Society of Amateur Photographers of New York, have become quite an interesting feature in their winter programme. Talks upon photography, commingled in an informal way with music and smoking, make the evening fly rapidly and bring the members into closer social intercourse.

In the Photographic Exhibition at Geneva, Switzerland, we note through the *Photographic News*, some interesting enlargements on bromide paper by Dr.

H. Fol. One is a Medusa, swimming in salt water, rather larger than life size; another, a star-fish (Astropeeten), enlarged twenty-five times; yet another, Stenophore (Beroe), alive, swimming in salt water, enlarged ten times. These all received diplomas, and were remarkably well executed. We also note that our good friend, Ed. V. Boissonnas, of Geneva, also received a diploma for his work on orthochromatic plates. Mr. F. Boissonnas also received diplomas for some very fine enlargements of views in the Valley of Zermat and other Alpine scenes.

We have received from Mr. Edward B. Harden, of the Geological Survey of Pennsylvania, two beautiful 6½ x 8½ silver prints, from negatives of the interior of the Kohinoor Colliery, Shenandoah, Pennsylvania. This colliery, belonging to the Philadelphia and Reading Coal and Iron Company, is working the "Mammoth Bed," and the pictures show the surface of the coal, together with the railway and the workings under ground. No. 1 was made by six successive flashes of the magnesium flash powder, at various points along the gangway, with a Darlot No. 2 lens on a Cramer plate. The other negative was produced by only two flashes. In the center of the second picture is the figure of one of the miners which was lighted by the second flash only. Some years since an attempt was made to secure negatives in this coal mine by means of the electric light, but they were not very successful.

ENGLISH NOTES.

[*From our Special Correspondent.*]

The Exhibition of the year—that of the Photographic Society of Great Britain—was opened on Monday, October 1st, in the rooms of the Society of Painters in Water Colors, Pall Mall, London; and will remain open till November 14th.

At the "private view," on the preceding Saturday afternoon, the London press was largely represented, while a brilliant company assembled at the *conversazione* given by the society the same evening.

The great question was, how would the withholding of all medals and prizes affect this year's show? It was a daring experiment; but its effects were seen in a largely diminished number of pictures sent in, so that although last year we believe a large number of pictures were refused, we understand that this year room was found for everything which was fairly passable.

The number of "frames" hung on the walls was 460, and on the screens about 60; making a total of 520; while about 70 pieces of apparatus were displayed on the tables.

Standing in the center of the fine room and glancing round, the most noticeable feature was the changed aspect of the walls. Instead of the chocolate and brown tones of old, upon a highly brilliant surface of albumenized paper, we saw the blacks and grays of platinotype, bromide paper, and carbon.

From an artistic point of view the change is undoubtedly a desirable one, and it has met with the approval of the artistic world.

Strolling round, we note the absence of any pictures by H. P. Robinson, Hyslop, Pettit, Cartland, and many other medallists of former years. The finest exhibit is by H. W. Gridley (an American I believe), whose fifteen pictures of Palmyra—the city in the desert—represent not only good photography. but also an amount of trouble, hard work and expense, which are the more to be appreciated when we remember that this gentleman is an amateur.

Harry Tolley, of Nottingham—the amateur who came to the front so rapidly last year—is well represented by fine landscapes printed on Pizzighelli platina paper. This paper has simply to be printed to the correct depth beneath a negative, and then washed, first in acidulated water and then in plain water. Its results perhaps hardly equal those given by Willis' (the ordinary) platinum process with hot development, but the trouble and uncertainty are much less. For fairly good results this new Pizzighelli process is certainly the simplest extant; it gives pictures in blacks and grays which are quite artistic.

Among the other principal exhibitors are Captain Abney and G. S. Edwards, George Davidson, J. Gale, F. M. Sutcliffe (of Whitby), J. Chester Jervis, W. K. Burton (Japan), H. Stevens, A. F. Lafosse, etc. Mrs. Brian Hodyson appears to be the only lady who sends pictures.

On the whole the exhibition must be pronounced as below the average of the last year or two, both in numbers and in quality. The London daily papers—the *Times, Standard,* etc., and also the weeklies, devote considerable space to a criticism of the pictures, which is a good sign of the ever increasing interest taken in photography.

The section devoted to apparatus contains practically nothing that is new. There is a big "Triple Rack Telescopic Bi-unial Lantern," shown by Wrench & Son, and the usual show of cameras, shutters, lenses, lamps, etc.

The "International Annual of Anthony's Photographic Bulletin" continues to excite pleasure and surprise in England; pleasure at its beauty and usefulness, and surprise at its cheapness. There was a great difficulty at first in procuring copies; the early shipments from New York were all snapped up beforehand; but the arrival last week of 3,400 more copies, has enabled the book at last to be placed fairly in the market. It is certainly far ahead of any annual which has ever been published; it will soon be out of print and impossible to obtain.

We have enjoyed, and are enjoying, a glorious autumn here. Cameras that had been stored away have been unpacked again; while the glorious tints of the autumnal foliage have caused many workers to obtain ortho-chromatic plates on which to register the various color values.

For interiors especially a fine autumn offers special advantages. The subdued and low light gives more freedom from halation, and greater softness. By backing plates with asphaltum, dissolved in benzole, an exposure hours long may be given, and yet windows not directly facing the sun can be secured without that halo of light which so greatly mars their beauty. But I have seen comparatively few "interiors" from America. How is it?

I wonder if it would be possible to get up an "International Exchange Club" in connection with the BULLETIN and the new "Annual." We know far too little of each other's work. There would have to be a small subscription to defray the cost of transit and postage; and absolute process as to distribution would have to be vested in the manager on each side. I could answer for the co-operation of some good workers on this side.

The number of new photographic societies springing up here is astonishing. Every week sees the formation of three or four. It is true that most of these are in country places, and probably include but few members, but it is a proof of the rapid extension of photography. In the "People's Palace," a grand educational institution in the east end of London, lately opened, a lecturer on photography has been appointed, and really magnificent laboratories and dark room fitted up. The London Camera Club has also outgrown its old quarters, and is about to remove to extensive premises on the Thames Embankment. And so photography flourishes on every hand. "So mote it be" is the emphatic wish of

Talbot Archer

THE COLORS IN PHOTOGRAPHY.

BY F. STOLZE.

(*Concluded.*)

The question now is: Is it possible to reproduce in this manner the spectrum mixed colors and white? Let us consider the latter first. It can be composed of two complementary colors, or any number of pairs of the same; further, every one of these colors can by itself be a mixed color, and finally all can act together. If we consider the first case, we have:

Red and Greenish-blue.	Orange and Cyan-blue.	Yellow and Indigo Blue.	Greenish-yellow and Violet.
White + carmine + yellow, white + cyan-blue + yellow.	White + red, carmine + yellow, white + white + cyan-blue.	White + white + yellow, white + white carmine + cyan-blue.	White + white cyan-blue + yellow, white + cyan-blue + carmine.
Gray.	Gray-brown.	Gray-green.	Blue-gray.

As can be seen, a pure white can never be produced in this manner, but a more or less pure gray. If this is the case with the combination of two colors, it is evident, that with a combination of more it can not be otherwise. But one recognizes also at once, that the diaphragms can in no way be selected so, that by the mixture of pigments white is produced, without injury to the purity of the several colors. Of course, if the diaphragms are so arranged, that they admit always the passage of a little of all colors, it will be possible—provided they are very intense—to produce a light gray, approaching white. The pure colors will then without exception be sacrificed, and have broken tones. Which of these two alternatives is to be proposed, will appear hereafter.

We come now to the proper mixed colors, whose tables is on page 556.

A few examples are sufficient, to see at once that oftentimes they have to become more less impure:

Purple from Red and Violet.	Blue-green from Cyan-blue and Green.	Gold-yellow from Green, Yellow and Red.	Indigo-blue from Violet and Cyan-blue.
White + carmine + yellow, white + carmine + cyan-blue.	White + yellow + cyan-blue, white + white + cyan-blue.	White-yellow + yellow + cyan-blue, white + yellow + carmine.	White + carmine + cyan-blue, white + white + cyan-blue.
Gray-red.	Blue-green.	Warm yellow-brown.	Indigo-blue.

As seen at once the coloration of the mixed color will take place everywhere, where carmine is mixed with other colors, containing only spectrum-red, but no blue; or where—reversed—spectrum-red is mixed to purple tones with colors from the other end of the spectrum. The reason for this is clear: carmine itself is a mixed color from spectrum-red and violet, while the simple spectrum-red can be replaced only by the triple combination of the binary-carmine with yellow. All colors on the contrary from yellow to cyan-blue give mixed ones; also with pure pigment colors, just the same as carmine with all blue and violet tones.

We have now come to the point where we can have a clear idea about the effects, which can be obtained by the chromo-Lichtdruck. If the diaphragms are suitably selected as shown above, all pure, saturated spectrum colors will also be obtained quite satisfactorily in the reproduction, but the mixed ones only partly. Everywhere, where spectrum-red mixes with tones of great refraction, the yellow which appears in the reproduction will act injuriously; everywhere, where carmine in combination with yellow-green is to replace the red, this will take place. Everywhere, finally, where complementary colors will be supplementary to white or pure gray, is it most obtained. The shadows, on the contrary, where all color tones appear very intense, answer very well to the reality. They reproduce the local tone as well as all reflections, sufficiently, giving for color printing this most difficult part of the picture, great resemblance to nature.

But the clearest lights and a number of mixed colors appear very unsatisfactory. Here, as far as we are able to judge possibilities, the intelligent support of the artist can lend improvement. Fortunately, the thing is not so very difficult.

If an ordinary negative is produced besides the colored plates, the highest lights of the latter can easily be covered on the back with the aid of a print from the same negative; where it is only to be observed that the local tone has to remain even to the highest lights.

In red, the high lights are covered weakly by carmine and yellow; in orange, the same; yellow, by yellow; green, by cyan-blue and yellow; indigo-blue and violet, by cyan-blue and carmine; while for white, all plates are covered.

In mixed colors, it is in the local tones also that that color is to be removed by covering, which is the cause of the trouble; in purple, the yellow and cyan-blue; in gold-yellow, the cyan-blue, etc.

With a little intelligence, every photographer, who is not an entire stranger to oil painting, will be enabled to remove these defects, and the picture will then show an abundance of color shades, as no ordinary color print with ten times the number of plates can reach. The first condition for this is, that the diaphragms let the light pass through, which is mentioned in our table 5, or a picture, unsatisfactory in every way, will be the result.

THE LIGHTING IN PHOTOGRAPHIC STUDIOS.

BY P. C. DUCHOCHOIS.

I.

The Art of Lighting is generally neglected by photographers. The pose attracts all their attention. They pose the sitter at one end of the studio, regulate the light for that particular place, and whatever be the character, the features of the sitter, it is invariably lighted in the same manner, or, in other words, by the light arranged once for all.

This is a great error. The pose and the lighting are closely allied to each other; one gives value to the other; both are subject to the same rules.

A portrait is composed according to the individuality of the person to be represented, that is to say, his character—which is reflected by the features, the expression of the face—his age, condition and profession. The attitude should be repose, simple; the face, the subject, and everything else related to it. The lines must be varied, well balanced; nothing in the picture should divert the eyes of the observer from the principal subject and destroy the unity; but they should be forced, so to speak, to unconsciously return to it.

If we apply this first rule to the lighting, we see at once that the portrait of a child, that of a young woman, and of a man, cannot be lighted in the same manner, nor every child, woman and man treated alike to preserve their individuality.

A child, for example, should be brightly lighted with opposition of well graduated shadows to render his delicate rosy face.

The portrait of a woman can be treated somewhat in the same manner to impart a calm, pleasing and youngful appearance to the picture.

For a man the opposition of light and shade should be more marked to give firmness to his features.

An old savant, a man of mark with characteristic features, may be lighted *à la Rembrandt*. Not the Rembrandt of the photographer, which consists in placing the sitter nearly profile, and the broad side of the face all in the shadow —a manner Rembrandt never used in portraits—but by large effects of light contrasted by dark shadows, the smaller side of the face in the shade and the light playing around the sitter to give relief to the figure.

The rules and examples of lighting which will be given in these papers should be studied by analyzing the works of the great painters in the originals, if possible, or in good engravings, in order not to be misled, and to produce just such effects; for, by an injudicious arrangement of lights and darks one may entirely alter the beauty of the model, or exaggerate the defects of its features, giving hardness to a pretty smiling face, an undecided, insipid appearance to a round face already devoid of character, softness to energetic features, etc.; and thus destroy the characteristics and, therefore, the resemblance, which does not merely consist in exactly reproducing the lines, the form of the head, but also its expression and originality.

II.

There are two principal modes of lighting a portrait, and, indeed, any picture.

The first one, which consists in distributing the light in masses by placing the whole subject in the light, is not devoid of grandeur. It has been, and is still employed by artists, but the lights should be relieved by half-dark and dark shadows to give vigor and solidity to the whole, otherwise the picture becomes grayish, monstrous, without character.

The other manner is personified by the great master in chiaro-oscuro,* whose works are for the artist and the student an inexhaustible source of study. "The portraits of Rembrandt—says Mr. Charles Blanc—induce to think, because they think themselves. Not only are they marvels of chiaro-oscuro, of touch and *modele*, but the nationality of the man, his condition, his temper, his moral physiognomy, all is at once observed. Statesmen, physicians, burgomasters, savants, every one of the models of Rembrandt are characterized first by the adjustment and the accessories, of which not one is not useful; then the soul becomes visible in their features; the habits of the mind, the most intimate sentiments betray themselves by the unexplainable expression of regard—they look at you—and it is there specially that his portraits are living. The interior flame which lighten the eyes renders them more luminous still than the ray of light of which the master has made a pencil. Rembrandt represents life by the thought, and the personages of his paintings can say with the philosopher: *Je pense, donc je suis.*"

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* Chiaro-oscuro (or light-dark) is the art of combining and distributing the lights and shades to produce effect, depth, relief and color in a picture.

The characteristic manner of this celebrated artist, which produces those bold and dark effects of light, in his paintings and engravings, and gives so much force to the scene he represents, is very simple; a beam of light falls on the principal subject, and being diffused or reflected as in nature, illuminates the secondary subjects, then melts into deep shadows, thus producing strong contrasts of lights and darks without harshness, whilst variety and balance are obtained by abrupt transitions, giving stability to the whole.

As it has been observed by eminent critics, this manner often costs too much, the rest of the picture being sacrificed to the principal subject and to the brightness of effects. Those who have tried to imitate the master did not always keep within reasonable bounds. Photographers, if we except Adam Salomon and a few others, have exaggerated it to the grotesque, not knowing either the principles of chiaro-oscura, or the manner of regulating the light in a photographic studio.

As examples of the manner of Rembrandt, study the well-known Dr. Faustus, "Christ Restoring the Daughter of Jairus," "Samson Menacing his Father-in-law," better known in Germany as "The Prisoner," the portrait in the gallery of Brussels, that of an old gentleman in the gallery of Dresden (a jewel), the celebrated "Night Watch," etc.

Here we cannot refrain from calling attention to the "Descent from the Cross," by the King of Antwerp, as an admirable example of composition, both in grouping and in lighting. All the personages of that sublime scene, the holy women, the apostles, concur to the same action, and all the lines so well supported, as rays of light, radiate from the Saviour, who is broadly lighted and relieved by a white sheet, whilst the other actors are in a secondary light, melting into shadows, to which half-tones give transparency.

III.

In a portrait, the head is of course the principal subject. It should, therefore, be the center of illumination, and every other part should not equal it in brightness. That is not to say that the face should be strongly lighted in the studio, which, in photography, would inevitably destroy the half-lights or details in the light, but that it should be so comparatively, the lights being sustained by well-managed shadows to give relief, brilliancy and power to the picture.

For the treatment of light *á la Rembrandt*, one should avoid falling into exaggeration. We too often see portraits so lighted, which are nothing but white and black patches, without half-lights and half-darks to connect the high lights to the deep shadows, all being devoid of penumbra to soften the whole. The opposite fault is also common, the picture being deficient in contrasts and insipid by its evenness.

The artifices which should be employed to regulate the lighting in the studio will be explained and illustrated further on. At present we give rules and advices to artistically lighten the picture.

When the lighting is wholly composed of lights and half-lights, the darks and half-darks appear with advantage, with great vigor. Hence, if we place the model in the shade, the greatest light falling on the secondary objects around, the figure stands well out, but being in the half-dark it should be received by half-lights and darks, else the whole is crude. This composition is seldom employed for portraits. In genre and landscape pictures it is quite effective. The opposite lighting, that is to say, composing the picture with lights and half-lights, and relieving the whole, is well adopted to portraiture.

Most brilliant effects are produced by opposing light to dark and *vice versa.* For example, by placing the lighted part of the subject on a dark ground and the shadow part on a light ground. This artifice, recommended by Leonardo da Vinci, is generally employed by painters, and to it is due in a certain measure the striking effects observed in their works.

By such an arrangement the light appears brighter, the dark darker, and the whole, being well balanced, acquires great vigor. It is specially recommended to photographers; moreover, it permits of projecting on the face a subdued light or to soften the direct light by certain means which we will explain, in order to preserve all the half tints or *models*, without losing anything of the general effect.

The dark parts of the picture should be contrasted by still darker shadows or by half-darks in order to well define them. And as the lights should be relieved by shadows, so should the masses of shadows be relieved by repeating the lights, but subdued, not as bright as the principal one which, as we said before, no other should equal.

When the lights are opposed to half-lights, the darks to half-darks, breadth, softness, harmony is the result, but the whole becomes insipid if not relieved by opposing stronger lights or darker shadows in some parts of the picture.

We have just said that the shadows appear so much darker as the light in opposition is brighter. This, which to the photographer is of great importance, because the same effect will be produced on the negative, we will have occasion to practically demonstrate, and to show how the details in the shadows, apparently obliterated when a strong light and a shadow are placed side by side, can be rendered visible by a proper regulation of the light.

To give air, distance, relief to a group, to a standing or sitting figure, the subject, *i. e.*, the center of illumination, should be relieved by the ground, and the secondary objects or accessories placed in the half-light or half-dark. This arrangement will be more effective if the foreground is kept in the shade.

As is seen, there is always in a picture a certain part of the whole—the subject in a portrait—which stands predominant. "It is necessary—says Sir Joshua Reynolds—that some part (though a small one is sufficient), should be sharp and cutting against the ground, whether it be light on dark or dark on light ground, in order to give firmness and distinctness to the work; if, on the other hand, it is relieved on every side, it will appear as if inlaid on its ground."

(*To be Continued.*)

OBERNETTER'S ARISTOTYPE PAPER.

BY J. H. STEBBINS, JR.

[Read before the Society of Amateur Photographers of New York.]

You will remember a short time ago a sample of paper was exhibited here, called the Aristo paper, that was the collodio-chloride paper. It printed almost in the same way as the ordinary albuminized paper, and the toning was done in the same manner, although the bath was a slight modification of the usual toning bath. The Obernetter paper is prepared somewhat on the same principle as the other, inasmuch as it is coated with silver mixed with gelatine. It is, I believe, quite a novelty in this country. Out of curiosity I bought a few sheets of it and obtained such good results that I thought it would be a good idea to show some pictures taken with it. The principal features that recommend this paper are the great beauty, depth and clearness, which I think you get with no other kind of paper I know of. And, moreover, you can tone it to almost any point you please. The toning bath that I use with the paper is composed as follows:

No. 1.

Acetate of soda (fused)	40 grams.
Sulpho-cyanide of ammonia	20 "
Water	1000 "

No. 2.

Chloride of gold	1 gram.
Water	1000 grams.

For use add to 200 grams of solution No. 1, sixty grams of No. 2.

The bath that is prescribed I don't like, and the formula I use is merely a slight modification of the original. Both solutions should be kept separate until used, and then they are mixed in the proportion already mentioned. The modification I make in this formula is simply to mix acetate of soda and sulpho-cyanide of ammonia together with water, and make up a solution of chloride of gold. In that way I can keep them in much better condition than if made up exactly by this formula. Then I mix the two when I want to use them. I will pass around a few prints that I made on this paper.

TONING BLUE PRINTS.

BY C. W. CANFIELD.

[Read before the Society of Amateur Photographers of New York.]

We are all familiar with the appearance of "blue prints," or cyanotypes, as they are sometimes called; they have enjoyed a large popularity ever since the invention of the process by which they are prepared, by Herschel, in the early part of this century.

Possibly their very frequency inspires a feeling of distaste for their hue, on the well-known basis that "familiarity breeds contempt." However that may be, certain it is that many trials have been and continue to be made, looking towards the toning of these prints, or substituting for their original tint, a more desirable one.

The fixed alkalies, potash, soda, ammonia, all affect the color of cyanotypes, in the way of bleaching it out, if their action is long enough continued, the color entirely disappears, leaving the blank paper. Of course it is impossible to secure any uniformity of action by means of these agents.

Tannin, in various forms, has also been proposed, and is to a certain extent useful, according to the manner in which it is employed.

I recently saw published in *Progrês Photographique*, a French journal, the process of Professor Paul Roy, and tried it with results which seemed so successful, that I determined to bring them to the notice of this society. His method combines the use of ammonia with a form of tannin, and is as follows:

Make a solution of

Borax	70 grams.
Water	1100 c.c.

Add sulphuric acid in small quantities until litmus paper is turned slightly red. Then add a few drops of ammonia until the alkaline reaction reappears, and red litmus paper is turned blue. Then put into the solution 10 grams of red crude gum catechu, and allow it to dissolve, with occasional stirring.

To tone a print, immerse it a minute or longer, according to the tone which it is desired to obtain. Wash well.

The solution will keep indefinitely.

I am not sure that the bath I prepared fulfilled all the conditions, since I had difficulty in dissolving all the borax in the given quantity of cold water; but one of our members gave the suggestion that hot water will take up more of the borax. My bath does not work so quickly as that of Professor Roy's seems to.

Catechu may be obtained at any drug store. It is used in medicines for its astringent qualities. In chemical composition it is nearly 50 per cent. tannin.

I have here the bath, and will illustrate its action, and will also pass around for inspection some of the results of experiment. In the evening, of course, the results do not show the same effect as in daylight. The tone is really a dark olive-green, but in daytime it has all the effect of a black.

The red color you see on some of the prints is the result of their treatment after toning with a solution of soda. In blue prints soda leaves a white mark; but after the toning process it becomes, as you see, a red.

[*From the Photographic News.*]

THE PRACTICE OF NEGATIVE RETOUCHING.

BY W. E. DEBENHAM.

No. 2.—The Desk.

For many years before the practice of systematically retouching negatives came in, it was an occasional habit with photographers to touch out any bad spot on a negative by holding the plate up to a window, and applying color with a brush to the transparent place. Sometimes rather more was attempted than the mere filling up of defects due to manipulation. Wrinkles would be covered with a thin coating of color, and freckles treated in a similar way. A primitive sort of retouching was thus performed, but under great disadvantages.

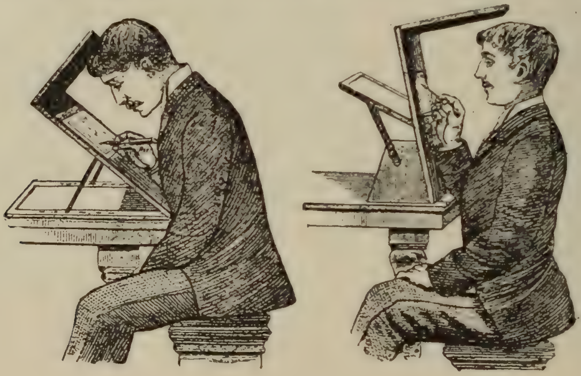
The inconvenience of the position, the awkwardness of having to hold the plate with one hand all the time it was being worked upon, and the confusion arising from such a large surface of light being presented to the eye, and from some light being reflected from the unsheltered surface of the plate, were obstacles in the way of executing anything like the complete systematic retouching that was subsequently introduced. A desk or easel was therefore made use of, consisting of a slope fitted with frames to receive the negatives, and supplied with a reflector lying flat upon the table or base-board of the desk. This form of desk, however, has the serious disadvantage of necessitating a more or less stooping position, as although the negative may be on a slant, the eyes must look downwards towards the reflector, which is flat on the table. Having observed many years since that a retoucher who had been working for a year or two at a desk of this kind was acquiring a stoop, it occurred to the writer that the position which induced the stoop might be obviated by an arrangement of the desk which should make the line of sight nearly horizontal, instead of being vertical, as when looking down on to a reflector. The manner in which this idea was carried out will be described presently, but it may be said here that the effect of using the more upright desk was not only to get rid of the stoop which had been acquired at the older form, but to develop an upright figure and healthy carriage in another who began the work at that time, and who previously had a somewhat stooping gait. The advantage to the health of the more upright position as a habit, to say nothing of graceful bearing acquired, will be readily appreciated.

The leading feature of this second form of desk is the raising of the reflector to nearly the level of the eye. This change involved that unless the reflector was unusually large, the negative, if a large one, could no longer be illuminated all over at one time, but only on that portion which is above the level of the bottom of the reflector. As, however, it is generally desirable to shut out the light from all but the part upon which we are working, there is no disadvantage, except for larger heads than are generally photographed, in the aperture for light being comparatively small, and all above the level of the bottom of the reflector. Starting, then, from this level, there is in the steeply slanting board an opening three inches broad by four inches high An adjustable lath serves to rest the negative upon; through the ends of this lath are two screws, which work up and down in slots cut in the slanting board, and are fixed by milled head-nuts at such height as to bring the face on the negative opposite the middle of the opening. The reflector is hinged or pivoted, and set at such a slope as is required, in order to present a clear surface of sky to the eyes of the retoucher looking through the negative.

A second lath, thinner, and about two inches in width, may be placed above the one which serves to support the negative. This extra lath is to serve as a rest for the fingers, to keep them from contact with the surface of the negative. As it has to go over the negative, it must stand about an eighth of an inch above the surface of the slanting board. This is conveniently managed by placing washers of that thickness on the binding screws which pass through the ends of the lath, and the slots already referred to, as serving to adjust the height of the supposed lath.

At the back of the board, just outside the edges of the 4 x 3 opening already mentioned, are grooves to carry a piece of ground glass. This glass must be removable, as occasions arise when it is better dispensed with. The grinding of the glass must be exceedingly fine, the same as is employed for the focussing screen of the camera. This sort of glass is known as the "finest matted." It must be kept clean; a speck of dust even is sufficient to interfere with the work, although the glass is by position not in immediate contact with the negative. Some retouchers prefer to use, in place of the reflector, a sheet of clean white card or paper. This will do in a strong light, and with a thin negative; but, under the contrary conditions, does not reflect sufficient light to penetrate the denser portions of the plate. There are thus three gradations of light that may be employed according to the intensity of the negative and the strength of the light; the card or paper reflector giving the least penetrating illumination, the glass mirror and ground glass the medium amount, and the mirror without ground glass when it is desired to use all available light. The mirror should, particularly in the last-mentioned case, be so adjusted that on looking through the negative with either eye alternately without moving the head, there shall be no sash-bar, chimney, or other object in the line or sight—nothing but clear, unobstructed sky.

To prevent confusion arising from light reflected from the surface of the negative, there should be no mirror or very light object behind the retoucher, and to further concentrate the attention there should be side screens, not shown in the woodcut of the desk, reaching from the top board to half-way or more down the side of the slanting board. These side screens may be of wood, made with the desk, or if it is unfurnished with them, a cloth thrown over the top, and hanging down on either side like a focussing cloth, will suffice. Still further to shut out extraneous light, a piece of black card or paper, having an opening rather larger than the head to be retouched, is laid upon or under the negative.



As the slant of the desk is so nearly upright, there is a tendency to push it away by resting the hand on it, which tendency must be overcome. One way of doing this is to place a heavy weight on the base board (the board upon which the sides stand). Another and better plan, when a work table is given up for the purpose, is to use a screw with milled headed nut, the screw passed through a hole in the table, and a slot in the base-board. The slot permits of the desk being fixed nearer to or further from the edge of the table, as may be more convenient. Yet another method is that shown in the woodcut, where two brass bands bent down into the form of a knuckle are attached to the bottom of the desk, and stop against the front of the table.

It is important that the desk should be so firmly fixed as not to shake and tremble with the pressure of the retoucher's hand. A twittering movement is very distressing, and if continued, injurious to the sight. If the table be small and light it is well to place it firmly against the window, and let it stand so that it shall touch the solid wall. A further addition that may be made to the desk is the fixing to it of a magnifying glass. This is not required by those whose sight is powerful, and if the desk is not very firm and solid, the pressure of the hand may make the glass tremble, which trembling is again very distressing and injurious. In this case it is better to have the magnifier mounted on a stand like a condenser of a microscope, but of course on a larger scale—large enough, in fact, to bring the magnifier into proper position when the stand is placed on the work-table. When the use of the magnifier is only occasional, it may be held in the left hand.

Retouching desks of this second form, which it is strongly recommended to employ for the health considerations that have been referred to, are now to be obtained commercially under various names, the distinguishing feature by which they may be recognized being the position of the mirror, which is raised and sloped instead of lying flat on the table. The slope on which the negative is laid is also much steeper than in the old form. They may also be very inexpensively made from the description given.

There is no necessity to make the desk folding with an adjustable slope; indeed, fixed wooden upright supports screwed to the sloping board and to the baseboard, are to be preferred as more solid and steady.

If it is required to retouch heads larger than the size of opening, 4 x 3 inches, a special desk must be made, as it is very undesirable to work as patches only of a face without being able to see the whole of it at once. Heads of larger size than that mentioned are not common in photography, but may be provided for by having a larger opening fitted with a plate of speckless glass, upon which the smaller negative plates may be laid when all-sized work is to be done on one desk. White card instead of a mirror will generally be preferable for these large heads, which commonly are not of such intensity as absolutely to require a glass reflector.

LARGE AND ENLARGED PHOTOGRAPHS AND BLUE PRINTS.

[Abstract of paper presented at the 17th Annual Meeting of the American Society of Mechanical Engineers.]

PROFESSOR THURSTON referred to the large blue prints he had exhibited at a previous meeting, one of which was 8 x 3½ feet, which was made on a revolving cylinder, without glass. He then showed a print 14 feet long and 2½ feet wide, made on a still simpler apparatus originated by himself, which he describes as follows:

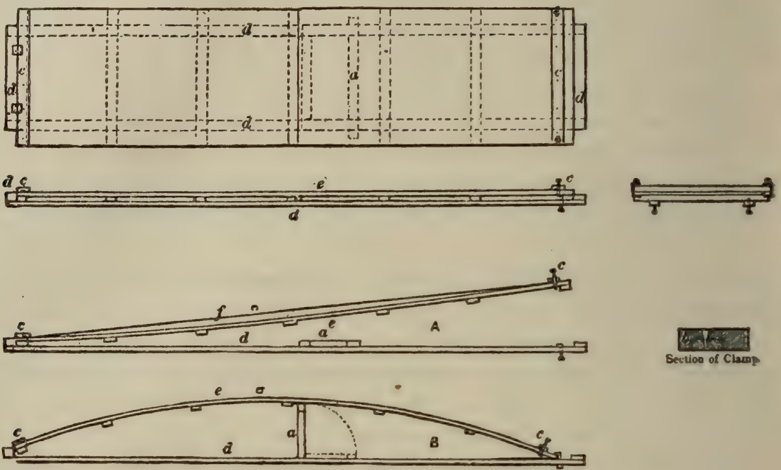
"The printing apparatus consists of nothing but a single thin board, of the length and breadth of the proposed print, with some margin for the stretching clamps. This board is covered with good felt of a carefully selected quality, securely and smoothly fastened to the board by any convenient means. A line of tacks around the edges does as well, perhaps, as anything. The sensitive paper is then stretched over the felt, and the tracing drawn over that, and both are smoothly stretched by clamps or other convenient device. It is of course evident that it would not be practicable, by this operation simply, to obtain that complete contact and pressure throughout the surface in contact that is required for good work; but this desideratum is easily secured by the simplest expedient imaginable: The board is merely sprung to a flat arc in the direction either of its length or of its breadth, ordinarily in the longer line. This brings everything 'taut,' and the printing is done precisely as under glass, with the further decided advantage that no light is lost through the intervention of the glass; which, however excellent in quality, will inevitably absorb a very measurable amount.

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.



Apparatus for Making Large Blue Prints.

"The accompaning sketch represents such an apparatus. Figs. 1 and 2 are a plan and side elevation of the board and its mounting. It will be seen that the upper, or printing board, is supported upon a lower and somewhat narrower and longer one, which, in turn, should be carried on trestles or other convenient arrangement. The printing board is stiffened laterally by strips or battens, but is free to spring longitudinally to any desired extent. The supporting board is stiffened longitudinally. At each end of the latter is a batten, *d d*, set transversely, which answers as a check, as seen later. Clamps, *c c*, are placed at either end of the printing board, by means of which to secure the felt, paper, and tracing. One or both of these clamps may be made adjustable for varying lengths of print. Figs. 3 and 4 show the method of operation. The board is first raised at one end and then slightly sprung. The felt and paper and the tracing which forms the negative, are stretched smoothly between the clamps and well secured. The board is next laid down on the supporting base, the two ends made fast, the one to the batten at the left, the other to another arranged at the proper distance from the right hand extremity, the printing board springing into a curve, of which the bridge, *a,* hinged at the middle as in *A*, and thrown up as seen in the sketch *B,* gives the versed sine. By springing to any desirable extent, as in *A*, and then reversing the curve, as in *B*, any required degree of tension and stretch can be given the tracing, and thus any necessary amount of pressure and perfection of contact with the sensitive paper may be obtained. The two sections at the right exhibit the end view of the pair of boards and a section of the clamp used."

It is obvious that there is almost no limit to the size of print that can be made by this method. The amount of springing necessary is small, never enough to cause a perceptible lack of uniformity in the tone of the print. If it should ever seem too great, this danger may be obviated by first springing the board in the opposite direction; then after securing the felt and paper, bending it a little past the straight line in the proposed direction.

Professor Thurston alluded briefly to some recent experiments in enlarging photographs, and stated that such enlargememts had been successfully made in sizes well adapted to the purposes of an instructor in making wall charts and maps, and in drawings of architectural subjects and machinery. Full page plates from the engineering journals, cabinet photographs and architectural drawings have been reproduced in photographs of 2½ x 3 feet, and 3 x 4 feet, at a cost well within the limit of availability. Such reproductions could not have been made economically by any of the older methods. They are clear and distinct in all details, the effect being particularly good in architectural subjects and complicated machinery.

[*From the Photographic News.*]

ACTION OF DAMPNESS ON GELATINE PLATES.

BY DR. W. R. HODGKINSON.

Most of the makers of gelatine plates tell us to keep them in a dry place, and if I am not much mistaken the same advice has appeared in the *News* more than once.

Last March I left Kensington, where I had a "dry" dark room, and came to a "high toned" southeastern suburb. I brought with me about eight dozen plates of various sizes and makes, and as there was no dark room proper, they were stored in a basement room of a nondescript character, but not "dry." Unlike the other rooms, there was no paper to come off with the general dampness, so the plaster comes off instead.

This I did not know at the time of storing the plates, and from March until this month I have had no opportunity to use any plates. I have now tried some, several makes, from boxes which are almost falling to pieces with damp, and as far as I can see they are quite as good as when kept dry.

Now what is likely to take place in gelatine exposed to damp?

It must be noticed that gelatine is not, strictly speaking, a chemical individual. We know really very little about it. The "pure" varieties—or good samples is better—absorb a small amount of moisture from an ordinary atmosphere, but it cannot be called a very hygroscopic substance. It is scarcely soluble in cold water, and its behavior in hot water is somewhat peculiar.

Containing water, and in a moist or soft condition it forms a good bed on which to trap germs and bacteria, and probably spores of fungi, etc.; but in stiffish gelatine it is doubtful whether any spores, at any rate bacterial ones, could multiply. In the covering of a plate I think it would be quite impossible, even supposing no phenol or similar substance had been employed in the making of the emulsion. And then there are the silver salts, which, if not exactly powerful antiseptics, are rather poisonous, and are sufficiently soluble, no doubt, for this property to be exhibited.

Again, a gelatine plate can scarcely get so moist that any aggregation of the silver salt could take place in it. The only danger I can see as likely to arise from damp is that some mould or fungus might spread from or be communicated in some way from the paper boxes, which rapidly get mouldy in a damp place. The rods of ordinary green mould would certainly ruin "mechanically" the gelatine coating. But I have not yet managed to get any form of "mould" to grow on a new plate, although I have had some in a "green" box for some time.

I am now going to test this point by burying a few plates in a box amongst some decaying leaves in the garden. It is very likely that in the cases of plates being spoiled by damp the cause has been really the action of some gaseous sulphur compound from the paste, etc., used in the construction of the boxes. There is more than enough sulphur in some comparatively loose states of combination, in the gluten paste used for cardboard, to spoil a dozen plates. I do not think we are yet quite clear as to how the sulphur is liberated from its organic combinations as a gaseous compound—sulphuretted hydrogen or carbon disulpide. It may or may not be by bacterial fermentation. Some complex organic compounds undergo a slow partial decomposition in cases where even the ubiquitous bacterium cannot be supposed to be at work. To mention only the substances known as sulpho-cyanides, or sulpho-cyanates, and many nitroso derivatives, which certainly slowly decompose, the former give off carbon disulphide, the latter oxides of nitrogen.

In the case of sulpho-cyanides, doubtless, water is the decomposing cause, and it is very unlikely that the state of combination of sulphur in glutinous substances is less complex than in sulpho-cyanates.

A FAREWELL TRIBUTE TO DAVID COOPER.

Just before the departure of the steamer that carried David Cooper from these shores in search of new health, those connected with the house of our publishers thought it would be a kindly act to make up a purse to be presented to him just as the steamer left the dock, and it was marked "Sealed Instructions." Below we give the list of those who contributed to this fund of friendship, and lent a helping hand to one whom we all had learned to esteem for his many good qualities. The subscription was thought of so near the sailing of the vessel, that we could not ask others to join us in this testimonial of regard. We regret this very much, for we are satisfied Mr. Cooper had hosts of friends beside ourselves who would have been glad to join in a generous act.

List of Contributors to the David Cooper Farewell "Sealed Instructions."

J. T. Fryer,
G. A. Ayers,
J. L. Murphy,
J. H. Heath,
Garvey Donaldson,
John D. Sodler,
E. B. Hallock,
H. T. Henderson,
H. E. Pierce,
Hy. Dietrich,
George F. Finlay,
Charles Friederich,
W. F. Walker,
H. C. Clark,
William Waldon,
G. W. Burnett,
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A. Cockerill,
F. M. Armstrong,
M. F. Hayes,
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W. K. Jones,
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W. H. Lewis,
D. Bartlett,
Dr. A. H. Elliott,
Dr. J. M. Jordan,
L. S. Cossett,
A. J. McCatty,
William Cleverley,
A. M. Molina,
W. P. Leache.

The following letter received from Mr. Cooper speaks for itself:

At Sea, Sunday, Oct. 28, 1888.

Dear Old Boys :

My never-to-be-forgotten friends, I seize this first opportunity to acknowledge a debt of gratitude which words cannot express or a life-time discharge. I shall write you more fully from Kingston, but could not lose the opportunity of letting you know that sealed instructions were opened, and if I could ever possibly have doubted the genuineness of your friendship this one overwhelming proof must have set the suspicion forever at rest.

But you know I never doubted, though any such generosity was far beyond my thoughts. Your sympathy and regard I knew were mine, and I gloried in their possession, needing not this tangible evidence as a proof. But it came, and at a time when open hands and loving hearts knew it would help to heal some of the wounds received in my unhappy battle with fortune. God bless you boys. I hope circumstances will never so place any one of you that a similar evidence shall be needed of sympathy and regard from your fellow workers. But, if it should, you will have the opportunity of enjoying one of the keenest pleasures that can help to throw sunshine on a clouded life.

Boys, I am getting well already. I eat three square meals a day and hav'nt had an ache since coming aboard. What do you think of that? The milk helped to do it, and if I get fat you'll be largely responsible. I don't need Catherwood or bitters now, for an appetite comes "natral like."

I address this to Fryer to be read to all the boys who will be glad to hear of me. Once more, till you hear from me from Kingston, God bless you all is the earnest wish of your fond but Unworthy friend,

David Cooper.

OUR ILLUSTRATION.

The handsome frontispiece which we present to our subscribers with this issue of the Bulletin is a charming composition, and full of study for photographers. It is one of those happy combinations of life and action that catch the artist's eye, and is at once transferred to the canvass to be

A thing of beauty, and
A joy forever

to those who look upon it. It has been admirably reproduced upon copper by the Photo-gravure Company of New York.

◆

Enclosed find money order for one year's subscription to your photographic Bulletin, which I think cannot be excelled.

William F. Thrum, *Honolulu.*

The getting of the Bulletin is like meeting an old friend, and I must have it in order to keep well posted in photography. E. Cannon.

I cannot get along without it. Elisha Bailey.

I prize the issue too much to lose one of them. W. A. Muse.

ANTHONY'S

Photographic Bulletin.

EDITED BY

Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.
and a corps of practical assistants.

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Advertisements should reach us not later than the Saturday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, six, twelve or twenty-four issues.

E. & H. T. ANTHONY & CO., Publishers.

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

A STATED meeting of the society was held Wednesday evening, November 7, 1888, with *Vice-President* JOHN G. BULLOCK in the chair.

The Committee on Membership reported the election of Mr. William Elliot Barrows as an active member.

Mr. WILLIAM H. RAU, director, representing the society in the American Lantern Slide Interchange, reported that the society's quota of slides had been sent to the Executive Committee, who had selected therefrom ninety-seven, which would be sent on the circuit of the various organizations connected with the Interchange. The slides from the Society of Amateur Photographers of New York would be shown at the Conversational Meeting, November 21st.

The Executive Committee of the Interchange had selected, from the slides for 1886–'87, two hundred to be sent to England in exchange for the same number to be sent to this country. Fifty-seven of the slides selected for this purpose were the work of fourteen members of this society.

In pursuance of the resolution passed at the last meeting, the chair appointed Messrs. Geo. B. Wood, John Carbutt, Sr., and David J. Hoopes, a committee to collect portraits and autographs of members of the society, to be preserved in an album provided for the purpose.

Mr. STERLING offered a resolution amending the By-Laws so as to provide for a Committee on Lantern Slides, to be elected annually, who shall have charge of the lantern slides belonging to the society, and other matters connected therewith. The amendments will be acted upon at the December meeting.

Mr. BROWNE presented to the library of the society copies of "A Manual of Photography," by George B. Coale, and "A Guide to Photography," by W. H. Thornthwaite, which were accepted with a vote of thanks.

Mr. STERLING made the announcement that, on behalf of Mr. George W. Childs, the pleasant duty devolved upon him of presenting to the society a set of the Muybridge plates illustrating animal motion, reproduced from the instantaneous photographs recently made under the auspices of the University of Pennsylvania.

In making the presentation, Mr. Sterling referred to the great scientific and artistic value of the work, and said it had been Mr. Child's desire that this copy of it should be in the hands of some permanent organization to which it would be of value. In the Photographic Society Mr. Childs recognised such a body, both by reason of the scientific nature of its objects and the artistic character of its work. In conveying the plates to its care, he expressed a hearty wish for its long continued usefulness and prosperity.

The presentation was received with enthusiastic applause, and a vote of thanks was extended to Mr. Childs for his valuable gift.

Mr. CARBUTT showed his new flexible negative film, intended as a substitute for both glass and paper negatives. The films are but one one-hundredth of an inch in thickness, and can be printed from either side. They weigh about the same as paper, or about one-twelfth as much as glass. They can be used in any ordinary plate holder, or in special thin holders made for the purpose. The manipulation of exposing, developing, fixing, washing, etc., are performed exactly as with glass plates. The difficulties and inconveniences of paper negatives and stripping negatives are entirely avoided. Mr. Carbutt also showed a holder devised to carry twenty-four films. By use of a changing bag, after exposure each film was removed from the front to the back of the holder, a fresh film being brought into position ready for the next exposure.

Mr. BARTLETT presented to the society, on behalf of Mr. McCollin, an improved ignitor for use with flash-light compounds, of compact and convenient form. He also brought to the attention of the members an improvement in mercurial intensification of negatives. When, after bleaching with bi-chloride of mercury, a solution of sulphite of soda is used, if left too long in the second solution the negative becomes reduced in density. If the sulphite of soda solution, which is usually alkaline, is rendered neutral with sulphuric or other acid, this reduction will be prevented, and the intensification will continue to the point desired with an improvement in color.

Mr. SUPLEE called attention to a report, lately published in the London journal, *Engineering*, of a discussion of the Physical Section of the British Association for the Advancement of Science, at the meeting recently held at Bath. But for the distinguished body before whom the matter was brought, and the serious manner in which it had been treated, the report would seem like a fairy tale and not worthy of consideration. It reads as follows:

"Mr. FRIESE GREENE'S paper 'On a Photographic Image of an Electric Arc Lamp probably due to Phosphorescence in the Eye,' is a contribution of singular interest. Mr. Friese Greene actually exposed a sensitive plate to the light issuing from his eye, and photographed with it. He stared at a 3000-candle arc lamp in Piccadilly, at a distance of 3 feet only, for fifteen seconds, closed his eye and brought it rapidly over the sensitive plate within 1 inch distance from the film. Thus he obtained a very faint yet distinct image of the arc, the two carbons, the image of the arc and the reflector, and also a faint indication of the cone. A second attempt failed. The arc probably produced a bright spot on the retina, which remained luminous for a moment after the lamp had been shut off. One remarkable circumstance of this novel mode of photographing was pointed out by Mr. Shaw: 'The image is in focus, so that the focus of the eye must have changed most rapidly.' Several speakers would have liked to suggest a continuation of these experiments with a weaker source of light, less deleterious to the eye; but Mr. Greene had failed to obtain any effect with gas lights."

Mr. JAMES WILSON showed a lens mounted in aluminium instead of brass, reducing the weight two-thirds. He also showed a lens fitted with Baush & Lamb's Iris Diaphragm Shutter for time and instantaneous exposures.

Mr. TRUSCOTT, a visitor, showed a lens fitted with an adjustable mount, which enabled the glasses to be brought more or less close together, thereby changing the angle of view. A lens by Steinheil of 3-inch focus and extreme wide angle was shown. The lens would certainly cover a 6½ x 8½-inch plate and probably 8 x 10. He also exhibited one of Steinheil's Group Anti-Planetic Lenses, No. 2 series, an extremely rapid lens, as testified by some excellent prints of a base ball field with the players in most rapid motion.

Adjourned. ROBERT S. REDFIELD,
Secretary.

CHICAGO LANTERN SLIDE CLUB.

THE October meeting was held at the Art Institute, in rooms of Architectural Sketch Club. Dr. H. D. GARRISON was called to the chair, in absence of President Nicol. After the minutes of previous meeting had been read and accepted, the following new members were admitted: C. E. Bradbury, J. L. Atwater, E. H. Reed, G. H. Daggett, Charles Stadler, F. S. Osborn, B. D. Washington, Wallace Fairbank.

Dr. Garrison called the attention of the members to a request having been made by a few for a committee to revise the Constitution, or at least to formulate a few amendments to the By-Laws seemingly necessary for the management of the club's affairs. Professor GEORGE HOUGH immediately moved that the matter be referred to the present Committee. Here the Secretary asked permission to make a few remarks on the question. He referred to the very small amount of assistance rendered during the past year by the members in general to the large membership at present, as compared to the little club of 14 of eighteen months previous, to the rather arduous duties imposed upon the Secretary, and that while he was glad to be of service to the club, and would do all in his power to increase the interest among amateurs, yet he hoped that Dr. Garrison's suggestions would prevail, and that some provision might be made before another election, whereby there could be a Vice-President added to the number of officers, and three members additional to the Executive Committee. Professor HOUGH withdrew the motion. Dr. GARRISON appointed as the Committee: Dr. C. F. Matteson, Mr. E. J. Wagner and G. A. Douglass.

The report of the Lantern Committee was read. Number of slides turned in for the Interchange set, 250; of these the Committee took 100 for the American Lantern Slide Exchange, and 30 from which the Directors could select for the London box.

Dr. GARRISON noticed in the room Mr. McAllister, of New York, and called upon the gentleman to know if he had not brought on *something new* under the sun to show his Western friends. So he had, and it took but a few moments to set up his little gem, "The Model" lantern for both oil and lime light, and demonstrated its utility and compactness to the pleasure of the club. Meanwhile Professor DONALD FRASER (who has proven quite an enthusiastic and valuable member) was setting up his lantern for the evening's entertainment.

First came 35 slides made by the Secretary from negatives taken by Mr. Frank Rae, of Detroit, on a flying trip to China—the entire set showed Mr. Rae's excellent eye for the unique bits of scenery, in by ways and under walls of the old Chinese cities, Shanghai and Hong Kong, bits to in Singapore, and along Suez Canal and Aden, Arabia.

Following these came slides by Mr. Flershem, beauties from Versailes and Paris. Mr. Fred Morrill gave some very odd Kodak shots about the city, and Dr. Garrison some quaint pictures taken long ago down East, and Mr. McAllister a few he happened to have in his grip. Those members present can attest to the exceedingly interesting meeting.

There are members who think we need a semi-monthly meeting, and surely with the interesting lot of slide studies, growing larger each meeting, there does not seem to be much time for business legislation or discussion on photographic problems, so the semi-monthly evening may be a reality soon. An increased interest in slide work seems to be shown among the amateurs here, and the coming season of the Interchange is looked forward to for pleasure during the winter months.

W. A. MORSE, *Secretary*.

SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

REGULAR MEETING—OCTOBER 9, 1888.

President CANFIELD in the chair.

On motion, the reading of the minutes was dispensed with.

The President read the following paper of his experiments, of which he spoke as follows :

The President then exhibited some samples (see page 683.)

I have here a print in which the background was originally of the same tone as this (illustrating), but was first removed by washing it out with soda with a brush ; some of these marks, which you see here, were made with the brush; this was submitted to a very short immersion in the bath, and it is very little changed.

This other sample is a print which was immersed for a longer time. Of course the print does not show very strongly now, but on examining portions of it, it will be seen that the contrast is quite strong, and is enough to make it more desirable than the blue print.

Here are two prints showing the effect, one being the original blue print, and the other the toned print. I omitted to say that in printing the blue prints to be toned by this process, they should be slightly over-printed, as a weak print tones out a little.

This (exhibiting another sample) was a very dark blue print from a negative, with little contrast, but as you will see on closer inspection, the tone is quite rich, and much preferable to the blue.

Here is another which I put into a frame for the purpose of flattening out, which shows the same effect in a less marked degree.

Here are samples showing the red color, of which I have spoken ; one after it has been toned and treated with soda. Another which had a very prolonged immersion in the bath, and which was afterwards experimented on, as you will see. These I will pass around for further examination.

Mr. BEACH—How long do they have to stay in the bath ?

The *President*—The original directions read one minute or more, but I find that from five to ten minutes for some of them were requisite, in order to get the color, but of course they can be removed, and the process of toning can be very easily done.

Mr. BEACH—How long did they have to be washed ?

The *President*—The same directions might be given for that as for developing the blue prints after printing ; until the surface is free from chemicals.

Dr. PIFFARD—What is the quantity of the first ingredient ?

The *President*—10 grams, I believe.

Mr. H. C. FRINGS, in describing Mr. P. Smith's Monocular Duplex Camera (two of which he exhibited), said : This is one of Smith's

Monocular Duplex Cameras. It has a roller holder attachment, and is made to carry 48 films. The principal advantage of this camera is, that it shows the picture full size, right side up, and it can be seen on the last instant of exposure. The shutter is set in here. The plate-holder slides in here, and before inserting your plate-holder, you can put it in here by a key at the side. The shutter can be given any speed desired, or a time exposure can be made.

The *President*—What is the principle on which you can see the picture ?

Mr. FRINGS—The mirror is at an angle of 45 degrees, and the lens throws the object on here, and reflects it upon the ground glass. Here is one of the same kind, which is a 4 x 5, with plate-holder.

The *President*—That gives the image the full size of the plate when you are looking on the focussing screen ?

Mr. FRINGS—Yes, sir ; throws it right on the ground glass ; when you get it right the exposure is made.

The *President*—Is the shutter sufficiently rapid for instantaneous work?

Mr. FRINGS—Yes. You can give it any speed by winding up the shutter with the key.

Mr. BEACH—Is it a disk shutter ?

Mr. FRINGS—No, sir ; the mirror is the shutter. The mirror going out of the way enables the picture to go on the glass. It is not like the Clark camera. The shutter going out of the way allows the picture to go on the plate.

Mr. BEACH—Is there any means of focussing besides looking in ?

Mr. FRINGS—Yes, sir ; you can focus accurately with it. If you wish to use it as a detective camera, it can be used with set focus.

The *President*—These cameras may be seen after the adjournment by any one who cares to examine them closer.

Mr. STEBBINS showed some samples of Obernetter's paper, and described his experiments with it (see page 683).

Mr. BEACH—Haven't they issued a supplementary circular in connection with that formula, recommending the acetate bath in preference to any other ?

Mr. STEBBINS—I do not know that, I have here some samples on some paper which was kindly contributed by Mr. Cullen.

A Member—Is it as sensitive as ordinary paper ?

Mr. STEBBINS—Very much more so. It will print out in about one-third of the time, I think. Another good thing about this paper is that you can make the prints to-day, and they will be good six weeks hence, and can be toned then.

Mr. BEACH—In connection with this subject I would say that I have tried this paper, and can heartily recommend it; the samples I obtained were sent from London by mail, and every one I printed from it came out good. I have a sample here of a print made on this paper, and also three prints made on the new Pizzighelli platino-type paper, which is the simplest of all papers for making proofs from negatives. I will pass these around, and the members can compare the platino-type print and the gelatino-chloride print, and see how they look. You will observe, Mr. President, that this paper shows the details in the shadows to much more advantage than the platino-type paper, but the platino-type paper has a very pleasant tone, and its advantage is, you don't have to over-print it. You print it just as deeply as you wish it to be. It has been said on the other side that the paper is much slower than silver paper ; this paper should be allowed exposure in sun-light for about fifteen minutes, and after the prints are done you can lay them aside and keep them as long as you wish, and when you desire to fix them, you simply put them in a bath of water, say 6 ounces, and add 20 minims of hydrochloric acid. That is all that is necessary, and you keep them in the bath about ten minutes, until the yellow appearance on the surface is all dissolved off. This paper was given to me on the 2d of October, and it was brought over from London a week before that, which would make it about three weeks since it was obtained, and how long it was prepared before that I do not know. These are put up in a little package, just as you buy ready sensitized silver paper.

A Member—Can it be bought here?

Mr. BEACH—I think not. I do not think it has been introduced here.

A Member—According to the English authorities they seem to have been having no end of trouble with it.

Mr. BEACH—That is what I thought, but every sheet I have printed turned out nicely.

Mr. NEWTON—What is this with the glaze on ?

Mr. BEACH—That is the Obernetter paper ; you will observe from the surface of it that it looks better than the other.

The *President*—Mr. Simpson has kindly brought here to show us his arrangement for producing lantern slides from negatives, which is of a very simple character, but which he has found very effective.

Mr. SIMPSON—One reason given by the members why they do not produce lantern slides from negatives is this: they have no apparatus and they don't feel like going to the expense of buying another camera. Some say they have not proper light. Last Sunday I reduced twenty negatives to about lantern slide size, and I took them right against the blazing sun. There is no reason why you cannot make lantern slides if the sun is shining through the window.

The only thing you need to do is to interpose a piece of ground glass. It simply increases the time of exposure. I went to a carpenter and got a board, and I put strips on it. That cost me a dollar. Then I went to a grocer and bought a box and paid five cents for that. I have made at least from 150 to 200 lantern slides by that arrangement I have got 5 x 8 or 4 x 5 plates, although it don't make any difference. I put in a 5 x 8 negative, and you can make it rise or fall just as you please. If you use a 5 x 4 negative you use this little arrangement. Here is a double spring. Oftentimes in using the detective camera you will get your picture on the plate crooked. This obviates that. You will get it straight in the camera. Then here is a spring. You can raise or lower it just as you please. You take an ordinary view camera and put it on the board. Here is your sliding front. Here is about the position where the camera will be. I take a focussing cloth and throw over all. This is my arrangement to slide it to and fro until I get a center. I require no assistance to remove the front while focussing, as in large copying cameras. The camera back can be reversed. All we have to do is to put the focussing cloth on, take off the cap and make the exposure, and the thing is over. It is so inexpensive that it comes within the range of anybody. I will have it here, and will be very glad to show it to anybody who takes an interest in it.

While here, I would like to mention something else. I went on a trip down South a short time ago, and before going I was not exactly satisfied with the plates I had been using, and I did not want to get stuck by turning out bad work, so I bought four different makes of plates. I took a plate out of each box and put it in the holder. Then I rigged up my detective camera and made four instantaneous exposures of the same subject. The light was of course the same, and the plates all had the same chance. Then I took the four plates and put them all in a large tray together, side by side, with eight ounces of developer. The results I will pass around. The plate that came out best I selected and used on my trip, and the plate turned out very well. I was very well satisfied with it. The names of the makers of the different plates were all marked on the plates.

The *President*—I think this would be a good time for me to notice a good many things that it is proper for me to call attention to here. I don't know whether they could be properly called communications or not.

In the first place, after the programme for the Fall in general, and for this month in particular, we have a lantern test on the 11th inst. Members are requested to bring slides for testing in the society's lantern, as the screen will be let down. By the way, the Lantern Slide Committee have been experimenting with the new screen. Members who have lantern slides which they have made themselves and wish to have tested, will, if they will bring them around on that evening, have an opportunity to see them on the screen. In connection with that I might say that the quota of lantern slides exchanged by this society is supposed to be due on the 15th, but I understand that a little leeway will be allowed, and it is especially requested that all members who have slides, who themselves make slides, will send copies of them in, or if they have negatives which they consider suitable for slides and don't care to attempt to make the positives themselves, and will submit them to the Lantern Slide Committee, they will look at them, and if they are deemed suitable, will make the positives.

On the 18th it is proposed to have a Smoking Concert. Some of us who were here the last time will remember that we had a very pleasant time, and it is hoped we shall repeat the pleasant experience of that occasion, and make them a regular feature of our winter programme.

On the 26th the lantern exhibition of the month will take place.

In connection with our programme for the fall, as I have mentioned, it might be well to speak of a scheme which is in mind of an exhibition of prints, the work of the members of the society. It is something which has not been done for two or three years.

It is hoped to have an exhibition of prints, the work of the members of this society, in connection with the meeting of November 28th. The prints will, of course, be allowed to remain on the walls for a few days after that, so they can be seen continuously by those who cannot come to the meeting. Mr. Leaning has kindly consented to look after the arrangement and hanging on the reception of the pictures, and that is a guarantee that it will be well done.

I have here the report of the judges of the Boston Exhibition. It is rather late in coming, but it is dated May, 1888.

I think it is scarcely necessary to read it, as we will have it appear in the printed report of the meeting.

I have received a letter from the Photographic Society of Philadelphia, in which they ask for a conference of the Exhibition Committee of this society with their own Exhibition Committee. This matter has been attended to by the Board of Directors, and a meeting arranged for.

There is also here a document in the shape of a prospectus of the Crystal Palace National Photographic Exposition in Commemoration of the Fiftieth Anniversary of Photographic Discovery. This occurs in 1889.

There is a point I desire to call attention to in connection with the printed copies of the Constitution, which, you will notice, have been placed for distribution. By an oversight, on the title-page, it was stated that this Constitution was adopted June 10, 1888. Some of us, who were here when it was adopted, will remember it was in January. That alteration will be made to make this strictly correct.

It was hoped that the society would be able to arrange several excursions during the past season. Mr. George Marshall Allen, who, at the beginning of the season thought he would be able to assist any such arrangement, was unable to do so, much to his own and my regret. Therefore nothing has been done, and it is almost too late to arrange anything of that sort now. But one of the members recently visited the battlefield of Gettysburg and found it very good stamping-ground for photographic hunters. He suggests that if there are half a dozen or more of the members who would care to make such an excursion, they could leave on the night of one day, spend a day, or nearly a day, there, and return the next day. The expense is not very great, probably not amounting to over $15. If there are any such who would like to arrange for such an excursion, and will give their names to myself or the secretary, it will probably be arranged.

As you will have noticed from the printed notices of the meeting, which have been sent around since the last meeting of the society, Messrs. H. T. Hardenburg, William B. Foster and E. Kroger have been elected active members, and Mr. G. Gennert a subscribing member.

A number of things have been sent in by people who have been obliging in that way, for exhibition and examination here. It would take almost too long to go through the merits or demerits of each article separately, therefore most of them will be left here on the table for examination by the members. I have a tabulated list of them here. Mr. George Murphy has sent one set of 5 x 7 vignetters. They are on dry plates, and quite an ingenious arrangement; also a 16-inch paper-cutter for trimming cards or albuminized papers; one $\frac{3}{8}$-inch green shutter; a 4 x 5 printing frame and print roller; one 5 x 8 lens, and one success preservative box. He has also made a donation to the society of a 10-ounce bottle of Seed's developer; 16 ounces of negative reducer; one pint of sulphate of soda. Of course these donations will be acknowledged by the usual vote of thanks of the society.

Messrs W. S. Bell & Co., of Pittsburg, have sent for exhibition: Applanatic lens, one 5 x 7 wide angle, and one 8 x 10 wide angle. These, as you will notice, are very small lenses indeed, but are said to do the work nicely. Messrs. Bell & Co., in a letter to the secretary, asks that they be tested in actual work.

The Scoville Manufacturing Company have sent a detective roller-holder, and have also donated a reflecting screen, a copy of letters on landscape, and a cloth bound copy of the *American Annual*.

Messrs. Anthony & Co. have donated a cloth bound copy of the *International Annual*.

These will be acknowledged by a vote of thanks of the society, and placed in the library.

There is another novelty which has been brought to our attention. Mr. Smith will show the so-called ivory films. They are made by Allen & Rowell, of Boston.

A Member—Would it be out of order to offer a special vote of thanks for that reflecting screen?

The *President*—It would not be out of order.

Mr. NEWTON—Then I move a vote of thanks for the reflecting screen. It will be very useful here.

Motion seconded and carried.

The *President* (referring to screen)—This part is like a folding music rack, and this is a paper stretched on, and here is a place for magnesium.

Mr. SMITH then explained the ivory films as follows: The principal feature of these films is their lightness. There is no glass about them. The gelatine emulsion is on celluloid. The manufacturers have called it ivory. It is not exactly that, but it is celluloid or imitation ivory. I believe in exposing and developing; they seem to allow a great deal more latitude than the ordinary plates. They can be fixed more easily than glass plate. You can take a dozen or more at a time, and turn them over and over, as you would your prints, and develop in the same manner. They print on either side, and these that I have here have only been developed, probably two hours, and are drying in all sorts of shapes. But if they are placed in a book, first soaking in alcohol and water, about three drams to a half pint of water, and slightly blotted off the surface, they will dry perfectly flat like a glass plate.

A Member—Will they remain flat?

Mr. SMITH—Yes, sir. Another point in their favor is in photographing against light. Towards the source of illumination they will not solarize. They explain that in a number of ways. They say that the plates, if they are coated with an emulsion which is very rich in silver, making it thick emulsion, that you can photograph on that plate, and not get solarization. It acts as a kind of ground glass, and prevents reflection. Whether that does the same with the celluloid, I am not positive. I will pass around some of these films, and show you how they work. The exposures of these were made, two of them, at six o'clock this morning, two of them at half-past eight o'clock, and two at four o'clock this afternoon, and they are all instantaneous exposures with a detective camera. The stop was about 32 F. The detail you see is excellent.

A Member—What is the size of the plates?

Mr. SMITH—They will be obtainable in all sizes, but at present they come 4 x 5 and 5 x 8 only.

A Member—What is the expense compared with glass plate?

Mr. SMITH—They are a trifle more. Films 4 x 5 retail for a dollar a dozen, but they will probably have to come down as they gain in popularity.

I have here a lantern slide which has been made from one of the negatives on that film.

Professor NEWTON—How are they held in the holder?

Mr. SMITH—They are placed in an ordinary plate-holder, and backed with a thin piece of card-board, but they contemplate making a holder especially for them. They are light and compact.

The *President*—This seems to me to be a great step towards the long expected film. A good many have suggested a film of collodion, and have experimented in various ways, but these seem to be very satisfactory examples of a new application.

A Member—Can they be intensified like any ordinary negative?

Mr. SMITH—They can be; but you will find in making the emulsion they need no intensification. They are full of silver. There is more silver in them than any plate in the market that I know of, and they develop readily, and if you are not careful you will get them over-exposed. They can be intensified in the ordinary way if necessary.

Mr. STEBBINS—Is there any trouble in making it stick to the celluloid?

Mr. SMITH—The film itself adheres more than it will to a glass plate, and is free from frilling on that account.

Mr. SMITH--I take the ordinary detective holder, and drop the films into the holder as I would a plate. Then I drop two pieces of card-board between the films. Then I put in a septum and pull out the slides, and put my finger there so it gets a hold on all four sides of the film. Carefully dust them off, and replace the slides, then it is ready for exposure.

The *President*—No doubt, as Mr. Smith suggested, if these prove successful, there will be plate-holders invented for them.

A Member—I do not see what prevents the films being bulged on the surface so as to strike the slide when it is drawn out.

The *President*—It might be desirable to expose it through a thin sheet of glass.

The *Treasurer* then read his reports for the last two quarters, after which a recess was taken.

It should be mentioned that at the regular meeting of the society on June 12th, 1888, Mr. F. C. Beach exhibited an improved iris diaphragm and shutter, the invention of Mr. Edward Bausch.

Mr. Tisdel exhibited one of his recent detective cameras, and President Canfield also showed one sent for exhibition by the Scovill Co. A lantern exhibition was held on June 22d, but owing to the extreme heat very few attended.

LANTERN EXHIBITION, October 26, 1888.

The first fall lantern exhibition was held at the rooms of the society on the date mentioned above, and represented the work of members, as culled and selected by the Lantern Slide Committee.

As a whole, the exhibition was regarded by the large audience which crowded the hall as one of the most successful and entertaining, both as regards its artistic and technical merits, of any ever given by the society. Another point of interest was the fact that it included the work of seventeen different contributors, and was intended to represent the society's quota of one hundred lantern slides which is to be sent the rounds of the Lantern Slide Interchange during the coming winter. For a long time the Lantern Slide Committee has been experimenting on a screen to take the place of the old tracing paper screen previously used, and on this occasion tried for the first time publicly a screen made of cotton sheeting saturated with parafine wax.

It proved to be a decided improvement, giving to the pictures as they were thrown upon the screen a very soft and agreeable effect. In addition to the screen a different objective was employed, which made the pictures more distinct. Messrs. Beach, Simpson and Cobb successfully worked the society's lantern, while Mr. J. Wells Champney, seated in the midst of the audience, mentioned the titles, as the pictures appeared, making interesting and instructive comments on their artistic merits. There was a great variety of subjects. Among the views which were especially liked was "Towboat, Connecticut," on the Hudson River, having beautiful cloud effects in the sky; "Study of Trees" and "Along the Ramble" in Central Park, all being very clear and fine, made by Mr. R. McNeil; "Twelve o'clock Lunch," three goats forming part of a family of one hundred goats owned and cared for by a peculiar old lady living in a secluded spot among the rocks of the Palisades, near Rockland Lake, N. Y.; the picture was taken instantaneously, and was an excellent animal study; also "A Hearty Laugh," a young lady with open mouth, laughing as if she enjoyed it, seated on a rock with an open striped parasol resting on her shoulder. Mr. Champney remarked that she wanted Mr. Simpson to wait till she got through laughing, before he took the picture, but he could'nt. It was an excellent out door portrait.

"Boats in Tow of our Steamer," and "Evening on New York Bay," were also very much admired. The water in the former picture appeared to be actually roaring; the spray and foam were splendidly caught. The cloud effect in the latter view was most pleasing and beautiful.

Another amusing picture was "A Mud Pie Factory" at the Childrens Home, Bath, N. Y., one showing several girls near the camera in a line making mud pies on a sort of a plank or pier. One nearest to the camera said to Mr. Simpson, "Say, mister, will you take my picture;" the next girl to her, looking indignant, said, "Shut up, Mag," and it was as she said this that the shutter went off. The various positions of the fingers and hands made quite a remarkable picture. An equally good and effective photograph was one made instantaneously of about one hundred and fifty girls assembled near the shore. Mr. Simpson arrested their attention by telling a very amusing story, and while he succeeded in getting them all to laugh, not excepting the matron in the back-ground, he took the picture.

The natural expressions on all of the faces, the odd positions assumed, the variety in dress, all combined to make a very interesting picture.

There was also a very pretty waterfall and landscape view in the Catskills, and a reminiscence of the New York March blizzard, and an excellent instantaneous picture of the monitor "Passaic" at the Portsmouth Navy Yard, showing distinctly the marks where solid shot had struck and dented her turret. It is needless to add that all of the foregoing views were made by such a careful worker as Mr. Charles Simpson is known to be.

A few marine views by Dr. Nagle were very good, one cloud effect called "Solitude" on Sandy Hook Bay, was specially good. An interesting picture of his was a fish hawk in the act of lighting on its nest in the top of a tall tree. Also an amusing picture was of two dogs seated in a chair.

Miss Catherine W. Barnes contributed some excellent interiors, and two historical views of considerable interest; one was called "The Old Bussing Homestead," 148th street, New York, and "Breakneck Hill," 146th street, New York, down which the British troops fled before the victorious Americans on the 15th of September, 1776.

"Echo Lake," by her also, was a beautiful study of landscape and water.

"Apple Blossoms," by Mr. William M. Murray, was a very pretty picture, and several other instantaneous boating views by him were very well done. One, caught instantaneously, of a bather in the air plunging into the water, was especially good, and a laughable picture was "two cherubs of the New York Athletic Club," representing two bathers standing in front of a float, leaning on their arms, "cherub style," looking at each other. His instantaneous picture of "Pocantico Falls, New York," was very much liked, and excited applause.

Mr. H. J. Newton had a few interesting landscape views, made this summer; some of the best were entitled "Arch under Piermont Avenue, Piermont Avenue, Nyack, N. Y." A splendid view on the "Bronx, near New York," "Sheep in Central Park," "Roadside Creek, near Nyack, N. Y.," and an "Old Orchard and an Old Well at Nyack, N. Y."

His instantaneous pictures of swans in Central Park were very well done.

Of the three slides contributed by Mr. H. N. Tieman, that called "Layfayette Park in St. Louis," was the best. A gem was called "A Brook," by Mr. Duffield; it was remarkably clear, soft and attractive.

Mr. R. Lamborn had two interiors, made last January in Rome, Italy, showing Miss Johnson's studio, with the lady at work on a marble bust of "General Logan;" these were quite novel and interesting.

Mr. F. F. Cobb, one of the enthusiastic makers of lantern slides, and an active member of the Lantern Slide Committee, contributed a number of slides, made from the negatives of different members. One, a group of girls in bathing costume on a boat-house float, laughing at some funny story, and entitled "In For a Good Time," from a negative by Dr. Piffard, was particularly amusing to the ladies of the audience.

He had, too, some very good slides of old, broken down buildings, from negatives by Mr. W. T. Colbron; "State Camp at Peekskill, New York," from negative by Dr. P. H. Mason; a "Lawn Tennis Group," by Mr. Colbron; also "Fire Island Light," and a group of "Life Saving Men," by Mr. Frisbie.

"Judging Calves" was an excellent instantaneous picture; Mr. Cobb did not know who made the negative.

Mr. Colbron sent a very pretty landscape slide, entitled "A Meadow Stream." Mr. P. Smith had a fine study of elephants, the slide being made from a negative on the new celluloid film.

A peculiar picture was a slide representing the different phases of the recent eclipse of the moon, all made on one plate by shifting the position of the camera at intervals. It was made by Mr. J. H. Stebbins, Jr. He also had an instantaneous bit called "Hokey Pokey Ice-cream Man," which was amusing.

In connection with Mr. Cobb's Fire Island Light-house picture, there were exhibited by Mr. Beach a series of views illustrating the interior of a United States' Life Saving Station. He also had some charming roadside studies. One, called a "Glimpse of the Housatonic," and another "Putney," showing beautiful light and shade effects, were particularly admired, and a pretty picture of a "Rustic Well Curb," also an animal study of a Japanese dog, which was shown just before Mrs. Nathan Appleton's picture of an Angora cat. A single slide by Mr C. S. McKune, entitled "An Old Farmer," was an excellent portrait study.

Mr. R. H. Lawrence having recently been abroad, was able to secure three or four gems in lantern pictures; one a view in "Bayeux, France," and another, "Mt. St. Michel, France," were particularly fine. "An Interior of a Norway Peasant's Cottage," though secured under some difficulty, was remarkably well done, and a view that was loudly applauded was entitled "The Saw Mill River," Westchester County, N. Y., which was very attractive and artistic in its composition and effect of light and shade. The exhibition lasted for over an hour, and terminated shortly before ten. The progress shown and the higher standard raised will doubtless tend to elevate the art of photography in New York.

Smoking Concert.

On the evening of the 18th day of this month, the second Smoking Concert given by this society took place, and the lecture-room was filled by an attentive and appreciative audience. The programme was as follows:

Piano Solo, "Cleveland and Harrison March."
Mr. E. W. Berge.

Bass Solo, "Big Ben."
Mr. John Shaw.

Part Song for men's voices, "The Sea Hath its Pearls."
Messrs. Shopp, Ogden, Simpson, Clements, Mix, Wilmot, Dinsmore, Shaw, Gartland and Atkins.

Flute Solo, "Russian Serenade."
Rev. M. Brodnax.

Part Song for men's voices, "Cottage Dear."
Solo by Mr. John Shaw.
Messrs. Shopp, Ogden, Simpson, Dinsmore, Clements, Mix, Wilmot, Atkins and Gartland.

Lantern Slides.

Piano Solo, "Selections from "Aida."
Dr. George B. Prentice.

Tenor Solo, "The Meeting of the Waters."
Mr. Edward Taylor.

Flute Solo, "Danse Espagnol."
Rev. M. Brodnax.

Bass Solo, "Deep Down Within the Cellar."
Mr. John Shaw.

Part Song for men's voices, "Parting."
Messrs. Shopp, Ogden, Simpson, Dinsmore, Clements, Mix, Wilmot, Gartland, Atkins and Shaw.

Mr. Berge's solo, "The Cleveland and Harrison March," was a composition of his own, and was facetiously given its name by one of the audience, who evidently wished to compliment the society on its impartiality in politics. The solos of Mr. Shaw were charmingly sung, bringing forth hearty applause from the audience; his voice is clear and exceedingly sympathetic for a bass, and under excellent control. It is not often that audiences now-a-days have the pleasure of listening to the flute as a solo instrument, therefore, the playing of Mr. Broadnax was appreciated not only for his skill as a player, but also for the novelty of the performance. Why do not singers treat their hearers oftener to what the Germans call "Volkslieder"—the songs of the people? Mr. Taylor made a good selection when he choose "The Meeting of the Waters," that exquisite Irish air which has been wedded to such beautiful verses by Moore. The singing of Mr. Taylor must have recalled to those of the audience who have visited the Emerald Isle the Vale of Avoca, "where the bright waters meet," and his sweet voice must have greatly added to the pleasure of the recollection of the scene. When one of our prominent universities conferred upon Mr. Prentice the degree of Doctor of Music, it recognized his ability as a musician and organist, and his exertions in furthering the cause of church music. Mr. Prentice is noted in musical circles for his skill as an accompanist, and his solo playing is always enjoyable. He gave good assistance to the solists. "I could listen all night to part-songs sung by men, if the voices blend well together," said one of the audience, after listening to "The Sea Hath its Pearls," and heartily applauding the singers. Messrs. Shopp, Ogden, Dinsmore, Mix, Clements, Wilmot, Gartland, Shaw, Atkins and Dr. Simpson are members of one of our largest and most prominent singing societies. The voices of these gentlemen blend well together, and they sang with good intonation, in excellent time and expression—the result of careful training. All the part songs were loudly applauded. The society is indebted to all of the gentlemen who took part in the concert for enabling it to pass a most enjoyable evening.

After the concert was over, the audience had a "German-American tea"—the "tea" having been brewed in a keg after the manner of the Germans, and the eatables being of the kind which caused some person in the early days of the art of making conundrums to perpetrate the one held by the present age to be a worm-eaten chestnut: "Why will a person never starve in the Desert of Sahara? Because of the sandwiches there."

H. T. Duffield.

NEW ORLEANS CAMERA CLUB.

Those familiar with the scenery of Southern Louisiana are aware that the country intersected by the Northeastern Railroad affords splendid material for the artist, hence it was that the New Orleans Camera Club selected that section as the field in which to operate on the occasion of its initial campaign into the country.

Having communicated the fact to the management of the Northeastern road that the "outing" would be along their line, the company very generously tendered the club the use of a private car and engine, the engineer being instructed to stop at all points of interest between New Orleans and Covington, and to hold his train subject to the orders of the club.

The railroad company also agreed to take a number of the sketches, to be used in an illustrated pamphlet which they are about to issue, and the State Immigration Society put in a request for some of the views.

Having determined on going, the club placed the entire matter in the hands of a committee composed of S. L. Mitchel, P. E. Carriere and L. Bourgeois, who must be complimented on the success which attended their efforts and on the completeness and care with which all the details of the excursion were arranged.

At 7 o'clock yesterday morning the special coach set apart for the club was backed up into the depot at the head of Press street. At 7.30 o'clock the train pulled out and steamed along at an agreeable rate of speed until Little Woods was reached. Here Mr. James Moulton fired the first shot, taking the station.

Slidell was the next station reached, and here Mr. James Moulton got in his work again.

At Pearl River Station the train stopped a few minutes, and the amateurs made the best of their time, taking some pretty sketches.

A crowd of curious negroes, attired in regulation country costume, lounging about the door of one of the dilapidated little buildings, formed a target for Dr. William Manderville. Mr. Harry Howard also found a subject here, and so did Mr. W. W. Crane, who caught the train as it stood in front of the station.

Abita was the next stopping place. The pavilion over the springs, the station, the train, the church, and, in fact, almost everything in sight fell a victim to the deadly aim of the photographers.

"Bogue Falaya River!" shouted the conductor, as the train slowed up on a splendid bridge over the prettiest river in the South; the sun was now out in all his glory, and between the high banks the crystal river rippled gleefully onward, glistening in the sunlight like a great silver serpent. The dark green banks, lit up here and there by the red leaves of some wonderfully pretty shrub and the autumn-tinted foliage of the larger trees, completed the gorgeous picture. Every member of the club was struck with the beauty of the scene, and in a remarkably short space of time every camera on the train was at work. Just to the right of the railroad bridge is a primitive structure, over which pedestrians and vehicles pass. Fortune favored the photographers, and the wild beauty of the scene was enhanced by the appearance of two horsemen, who dashed up at a swinging gallop. Seeing the numerous instruments leveled at them they pulled up short on the bridge and posed. One of the men was mounted on a big sorel with a blaze face. He was particular about the animal, and tried his best to keep it perfectly quiet. The picturesque blue shirt and big white suspenders worn by the rider will help bring out his horse when the plate on which his picture was taken is developed.

The other horseman was mounted on a big bay, which stood like a statue, never even noticing the horse driven to a buggy by two ladies, which pulled up on the approach to the bridge in time to get into one of the pictures at least.

This river is on the outskirts of Covington, and a few moments after the attack on the bridge the photographers swarmed into the little village. They were hospitably received by the inhabitants, but they had no time to accept of entertainment, and in a short time the company had scattered.

One party went to Mulberry Grove, where many pretty views were obtained. A picture of the Bogue Falaya River from an elevation was taken here.

Another party went to Thompson's Sulphur Springs, and in coming back their conveyance broke down. A picture of the wreck recompensed them for the inconvenience which they experienced.

The schooner landing was visted by one of the squads, and the Camelia taken as she lay at her wharf. Boating parties, young ladies, promenaders and picturesque buildings fell victims to the unerring aim of the photographers.

The public buildings did not escape, and the courthouse and jail form a part of the collection. A good picture of Judge Thompson's house was taken, and a pretty view of a ferry on the Bogue Falaya was also added to the collection.

Sharp at 2 o'clock the members of the club and their guests assembled at Honthier's Hotel. Here a sumptuous repast had been prepared for them.

After the wine came the toast, and Dr. Mandeville, who presided at the table, called on Mr. Horace Carpenter, who had been selected as the orator of the day, to say something.

Mr. Carpenter made a very pretty speech, in which he spoke of the prosperity of the club and the pleasures of being an amateur photographer.

Mr. W. W. Crane responded to the toast "To the Press."

At 4 o'clock the party started homeward.

The trip back was enlivened by a speech by Mr. Carriere. He also took a photograph of the car, using a flash-light.

Mr. Harry Howard also photographed the car by the same process.

The trip was a delightful one, the management excellent, the day all that could be desired and the Camera Club has every reason to congratulate itself on the success of its first outing.

In summing up the work it was found that 238 plates were exposed, or, to be more explicit, 238 negatives taken.

Mr. Harry Howard used a London camera, the finest instrument of its kind in this country. He brought it over from England recently, and tested it yesterday. It worked admirably, and all the members of the club were pleased with its finish and compactness.

The following gentlemen composed the excursion party: President, William Mandeville; Vice-President, Joseph A. Hincks; Secretary, Charles E. Fenner; Treasurer, Harry T. Howard.

Arrangement Committee—S. L. Mitchel, P. E. Carriere, L. Bourgeois, T. Reynes, H. Carpenter, G. Carpenter, James Moulton, T. W. Castleman, L. E. Bowman, W. W. Crane, R. S. Charles, Jr., W. J. Rhodes, A. De Guesnay, G. Weingart, D. Rosenberg, W. B. Krumbhaar, W. Labouisse.

The following were the guests of the party: W. H. Naugle, of Boston; C. L. Kitchen, of New York—both amateur photographers—and George Neuguier, C. R. Wunderlich, E. Grau, Joseph Abraham, C. H. Terry, E. S. Ferguson, passenger agent; P. A. Orr, City Railroad; A. Gamotis.

The views taken will be displayed at the next meeting of the club, on Wednesday, November 7. *N. O. Paper.*

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I AM proud of the BULLETIN. It is invaluable to the progressive photographer, and one of its finest features is the openheartedness of its editors, that alone merits the patronage of every photographer. W. B. COOK.

I MUST add yet another word of praise to what I have already said about the "International Annual of Photography." It is like an umbrella, everybody borrows it, and all find something of interest in its pages, even those who are not photographers.

ADELAIDE SKEEL.

SOME one gave Georgie a very rare stamp for his collection the other day. The youngster was delighted with the treasure, but could not immediately decide upon its real value. After a close examination he at last attested its rarity by saying: "Well, that is one of the most seldom stamps I ever saw."

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What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this. No attention will be paid to anonymous communications.*

Q.—T. M. writes: Please inform me how to take a photograph at night time with flash powder. I wish to take a meeting of a society in a hall 32 x 16 feet. I wish to group them on the stage. Must I put out all lights from kerosene lamps? Where must I let off the powder; by the camera or down by the group? Must I leave cap off until I set fire or must I use a shutter?

A.—In taking pictures at night with flash powder arrange the group with a good distribution of light and dark clothes. Let off the flash powder high up in the room and in a position that the flash cannot be seen through the camera. It is best to have the powder on both sides of the group, with about twice as much on one side as the other. Do not put out any of the lights; if you do it will make the eyes look unnatural from enlargement of the pupils in the darkness. Put the plate into the camera, after focussing, draw the slide and have the powder ready with some one to light each lot at the same moment, make the group keep still, uncap lens and give signal to fire the powder. After the flash cap the lens and put slide into the plate-holder.

Q.—Amateur writes: I wish to make an enlargement on bromide paper (18 x 22) from a 5 x 8 negative. What lens shall I use to give good marginal definition?

A.—A 6½ x 8½ Rapid Rectilinear Lens will answer your purpose, provided it is a good make.

Q.—J. F. W. writes: Please let me know how to mount aristotype prints and retain the gloss?

A.—Use a stiff paste, and don't wet the prints before brushing the paste over the backs. Let dry in a letter-press.

Q.—H. W. writes: Will you please tell me how the lining is done on the Ives photo-mechanical process?

A.—We do not remember just how the lines are obtained in the Ives process, but one method is to photograph a finely ruled plate at the same time that the negative is taken.

Q.—R. J. D. writes: Please be kind enough to tell me in the next BULLETIN what is the best thing to use in burnishing photographs to get a fine polish on them.

A.—Use good white castile soap, either dry or in an alcoholic solution. Pass through the burnisher several times to get the best polish, and see that the burnishing tool is clean and smooth.

Q.—O. C. H. writes: Can you inform me through the BULLETIN how the glossy albumen prints, that Mr. R. A. R. Bennett speaks of in the International Annual, can be mounted without losing their gloss? I have tried mounting on thin card, but when you heat them they come off.

A.—Try a stiff paste, mount the prints without dampening them, use a thick card and dry under pressure.

Q.—J. V. D. writes: Please answer through the BULLETIN if you know of any photographer who has had a safe containing lenses in a fire, and the lenses came out without cracking the glass?

A.—We have not heard of such a case; but a good safe will not allow paper to become scorched, and therefore we think the lenses would not be damaged. We doubt very much if the heat coming through a good safe would even melt the cement that holds the lens combination together.

◆

Views Caught with the Drop Shutter.

BUCHANAN, BROMLEY & CO., of Arch street, Philadelphia, send us their latest lists of platinotype paper and materials. They send a new set of directions for using the black platinotype paper, and also those to be used with the new sepia paper. The sensitized platinotype paper is said to keep better than formerly, and therefore amateurs need not trouble themselves to sensitize their own paper in future.

We are indebted to Mr. JAMES LOEBER, the Secretary of the Photographic Section of the Brooklyn Academy of Sciences, for invitations to their meetings. The Section is doing good practical work, and meets Wednesday evenings at 8 o'clock.

THE REEVE FLASH LIGHT.—Experiments with the electric light, the calcium light, and the magnesium flash-light in taking photographs at night or in places beyond the reach of sunlight, have long been carried on, and fairly good pictures have now and then been made. The expense of the electric and the calcium light and the dense fumes arising from the magnesium flash light have, however, rendered their use possible only in a limited field. Mr. W. Reeves, of this city, has invented a new method of using the flash-light, by which he is able to take photographs at night as well as by day,—in fact even better for many reasons. He uses no new substance for producing his light, but uses it with a different method from any yet applied, and with remarkable results. Many severe tests have been made, all turning out with complete success. The flash is instantaneous, the negative is made with equal rapidity. In many ways the lighting of the photographs is superior to anything done with sunlight. This is particularly true of portraits, in which the success of the new lamp is specially remarkable. Photographs of interiors have been made in which the flame from gas-burners—even the brilliant light from electric arcs—is reproduced as clearly as any other object, thus showing the intensity of the light given by the flash lamp. This discovery opens up a new field in photography, the immensity of which everyone at all familiar with the art, either as professional or amateur, will be quick to appreciate.—*Norwich Bulletin.*

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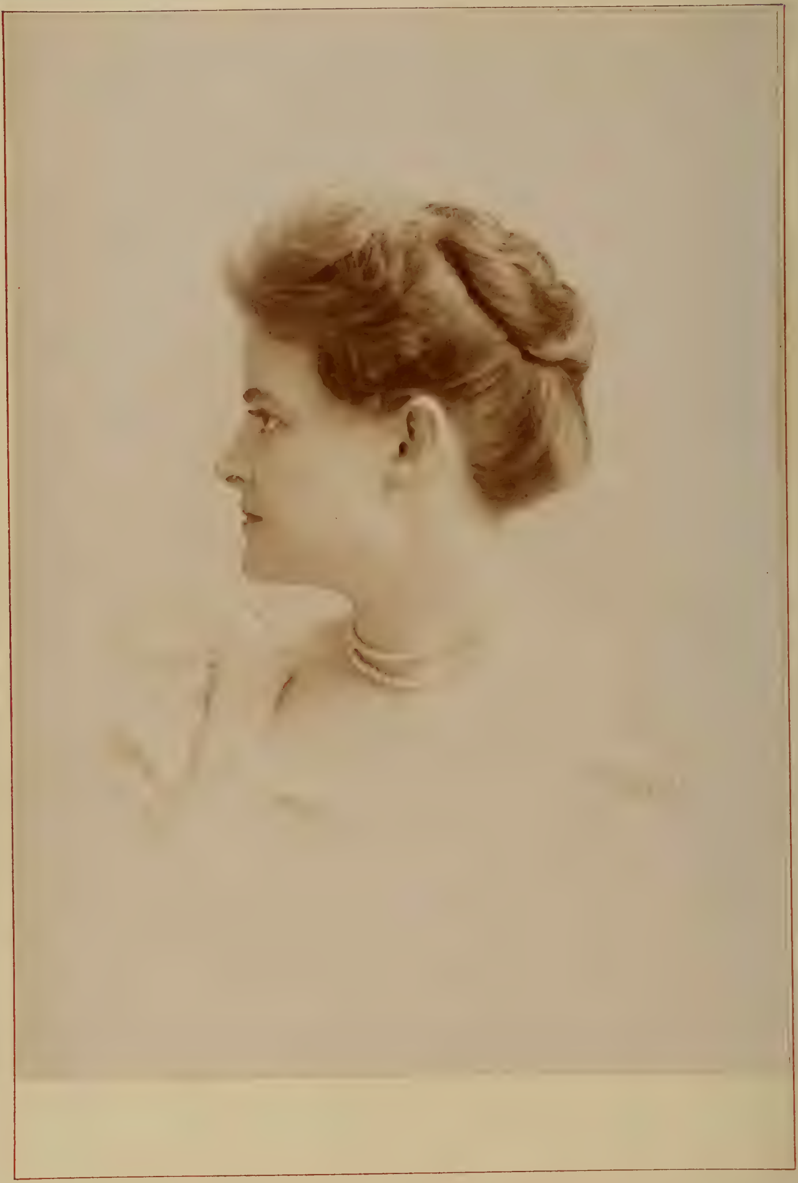

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A STUDY.

BY

C. F. CONLY, BOSTON.

ANTHONY'S

Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

DECEMBER 8, 1888. Vol. XIX.—No. 23.

THE BULLETIN FOR 1889.

THE steady growth of our subscription list, the scores of letters, testimonials of the value of the BULLETIN to its every increasing number of readers, leaves us without doubt that the policy we have followed heretofore has been acceptable to those who wish the best and latest records of the development of photography. During the past year we claim that we have presented to the readers of the BULLETIN the very best and most carefully presented information on all photographic subjects. The original articles in the BULLETIN have been from the best and most practical workers, and also from the highest scientific authorities on the topics of which they have treated. We have thus been able to give the most valuable information in both the practical and theoretical phases of our art.

At the beginning of the year we laid down a certain line of work at a high level and we have kept it at that level throughout the year. We did not offer our readers any special inducements or make promises that we could only keep for a short period; but we have given the very best information attainable, and this throughout the whole year that is past. Now we propose to follow the same line of procedure during the coming year. We propose to give our readers the best and latest photographic information, both American and Foreign, that is attainable; and we shall do this regardless of expense, feeling sure that our subscribers have long ago learned the truth of the statement "The best is always the cheapest."

Our German and English correspondence, which we claim is second to none, will be continued as heretofore. Our Reports of Societies will be given in the same careful manner as was followed last year. In many cases these are from the pens of our special reporters. Our Question Columns still continue to be an important feature of the BULLETIN, and will be kept up in the same careful and generous manner by our Editors and their practical staff.

We claim that there is not another photographic journal in America that gives so much really valuable information for so little money. The translations of papers from foreign journals alone, which have appeared in the pages of the BULLETIN during the past year, were worth much more than the cost of the subscription to every progressive photographer. And there is not another

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American photographic journal that has attempted to give such translations. Added to these things, there has appeared in every issue an illustration of high value, from the art side of photography. Not mere photo-lithographs or rough process plates, but silver prints, aristotypes, bromide prints, photogravures, the highest phases of photographic and photogravure printing. These illustrations alone are worth twice the value of the subscription price of the BULLETIN.

What we have done in the past we are prepared to do again, and we promise our readers that they shall have the very best value for their money. We do not raise the price of the subscription, and we only ask that our readers will do their share in helping us to furnish the best photographic information at a small cost, by asking every one interested in our art to look into the merits of the BULLETIN; an examination will prove that the journal is worthy the patronage of every true lover of photography. We have a goodly subscription list now, but there is room for many more names upon it, and we hope that those who intend to promote the good work next year will send in their subscriptions at an early date.

THE PUBLISHERS.

THE PHOTOGRAPHIC EXHIBIT OF THE AMERICAN INSTITUTE FAIR.

SECOND NOTICE.

DE YOUNG shows life-size and other portraits of various grades of excellence, finished in crayon and pastel.

Kurtz undoubtedly makes the best and most interesting exhibit in the whole exhibition. This exhibit consists for the most part of photographic reproductions of celebrated oil paintings made with color sensitive plates. It is truly wonderful to see the marvelous beauty of light and shade so softly blended in these photographic silver prints. Among the pictures reproduced in silver printing are: "Diana's Chase," by Hans Makart; "The Chase," a group of fox-hounds, by L. Milin; "Moliere Breakfasting with Louis XIV," by J. L. Gerome; and from the collection of Mr. James H. Stebbins, of New York, "Waiting for the Diligence," a Spanish scene by J. G. Vibert, also from Mr. Stebbins' collection; "L'Eminence Grise," by J. L. Gerome, another from Mr. Stebbins' collection; and "Reading Homer," by Alma Tadema. If there was nothing else to see at the American Institute Fair, it is a good education to go there to see these marvelous reproductions of some of the best masters of painting; and at the same time the wonderful development of photography that makes it possible to reproduce in monochromes the effects of the beautiful coloring of the originals.

Rockwood always makes an interesting exhibit, and his late work in bromide printing is truly wonderful. A life-size picture of Bill Nye and J. Whitcomb Riley together is startlingly life-like, and an achievement in this class of work. Other bromide enlargements are also very fine, notably a number of fine interiors. As usual this artist excels in children's pictures, his triplex cabinets being one of the prettiest ideas we have ever seen to catch the various moods of the little ones. The uniformly excellent quality of Mr. Rockwood's work is, we feel sure, due to the fact that he has never catered to the craze for cheap work.

Ehrlich has an exhibit of crayon and pastel work that speaks well for his ability to produce large work. In this collection was a life-size, three-quarter length portrait of General Hancock, a similar one of a lady, and a head and bust of a grinning darkey boy, all much worked-up upon the enlargements.

Dana had an excellent exhibit of portrait and group photography of various sizes. As was to be expected, the photographic skill displayed in this exhibit is of the first order. The posing is always excellent, the modeling excellent, the printing the best. A number of photographs of hands are shown in this exhibit, and as objects of beauty they are much admired; some holding wineglasses are particularly artistic.

Landy's "Hiawatha," the picture that captured the Blair Prize Cup at Minneapolis, is also to be seen at the American Institute Fair. It is to the left, just as you enter the large hall. If any of our readers have not seen it, there is now a good chance at the Fair. We have already given our views of this fine piece of work in the BULLETIN.

Notman & Son, of Montreal, show some fine views on the Canadian Pacific Railroad, embracing some of the grandest scenery in America.

Last, but by no means least, comes photo-mechanical printing, a phase of photographic development, that the managers of the American Institute Fair might make a much more interesting feature of at the annual exhibition. In this department of applied photography Mr. Kurtz and The Photogravure Company make excellent exhibits.

In the Kurtz exhibit we have some of the softest and best examples of the Meisenbach process, printed on India and other paper; the work is mostly small, very artistic and attractive for its softness, and at the same time full of delicate detail.

The Photogravure Company exhibits some of its excellent work from "Sun and Shade" and the "Art Review," also beautiful illustrations to W. C. Bryant's "Autumn Pastoral," in which two gems are the "Babbling Brook" and some Birch trees. Upstairs, hid away almost, we found some more of this company's exhibit. "The Lake Country of the Adirondacks," views in "New York's Wilderness," are a beautiful series of pictures. Scenes on "The Hudson" are also a set of gems of Hudson River scenery. "Among the Hills," a number of White Mountain views, are fine. Then we have pictures of "Sleepy Hollow;" "A Midsummer Night's Dream," as produced at Daly's Theatre, New York; views in the "Yellowstone National Park," and many others. All these are beautifully done, full of artistic feeling, and marvels of the photo-mechanical phase of our art. Some were taken with color-sensitive plates, and others by the aid of the electric light. If our readers are interested in this development of photography they cannot do better than see both the Kurtz and Photogravure collections at the American Institute.

And finally, let us hope that next year, the semi-centennial of Daguerre's discovery of photography, will see such an exhibit of photographs and allied pictures, at the American Institute, that we shall be compelled to say "This is worthy of the Empire State."

EDITORIAL NOTES.

A NEW photographic society, called "The New York Camera Club," composed exclusively of amateurs, and with a membership limited to fifty resident members, has been organized under the Presidency of Mr. Daniel P. Read, and with the following named gentlemen as initial members: Henry J. Newton, E. P. Fowler. C. Volney King, R. M. Fuller, Roosevelt Schuyler, E. N. Dickerson, Jr., A. T. Gillender, H. M. Baldwin, H. G. Piffard, George Shorkley, W. T.

Colbron, James Stillman, Sydney Bishop, and J. H. Wainwright (*Secretary*). In addition to the above members a number of other gentlemen have joined the new organization.

With this issue of the Bulletin we give a paper by Mr. Fred E. Ives, read before the Franklin Institute, that marks a very decided advance in the direction of Heliochromy, or photography in colors. We are satisfied that by careful experimenting, such as that used by Mr. Ives, we shall ultimately be able to reproduce upon the photographic print the colors seen upon the ground glass. We must congratulate Mr. Ives upon his careful and patient work in this field of photographic advance.

F. Ruschig makes hydroxylamine as follows: Concentrated aqueous solution of sulphurous acid is added to an alkaline nitrate at a temperature not exceeding freezing if the soda salt be used, or 40 degrees if the potassium salt; or the same product is obtained by passing sulphurous anhydride to excess into a solution of the alkaline nitrate, containing also a carbonate or hydrate. The resulting solutions being heated for a short time at 130 degrees, or a longer period at 100 degrees, are resolved into hydroxylamine and alkaline sulphates, easily separable by fractional crystalization.

A new English photographic journal, called "Photography," and devoted to "the amateur, the profession, and the trade," has recently been sent to us, and it is certainly a most remarkable addition to photographic literature. In the first place it costs only two cents (one penny), and is about the same size as the *Photographic News*, although it contains much less matter (twelve pages). It is well edited by Henry Sturmey, with Andrew Pringle and Professor Chapman Jones as contributors. Altogether we think the new candidate for favor amongst English photographic journals is a decidedly healthy production and bids fair to find much favor with the Britishers.

An exhibition of photographs will take place in Moscow, Russia, on December 26th, in celebration of the invention of photography. The Grand Duke Alexis is a moving spirit in the celebration, and over one hundred and fifty medals and other awards will be given to competitors.

The Exhibition of Member's Work, at the Society of Amateur Photographers, November 30th, and the following days, promises to be of much interest, and we earnestly recommend all who can do so to take a look at it. Cards may be obtained by application to the Secretary, C. S. McKune, 122 West Thirty-sixth street.

Mr. J. W. Osborne, one of the earliest workers in photolithography, has presented to the United States National Museum at Washington, and the Boston Art Museum, his collection of prints illustrating photomechanical printing. This is a most valuable accession to both museums, and at Washington it will form the neucleus of a collection illustrating the Graphic Arts. The donations made by Mr. Osborne have been collected during many years from the best workers in both Europe and America.

Mr. Ives exhibited, at a recent meeting of the Franklin Institute, a camera contrived by himself, in which the lenses and color screens are adjusted so as to produce simultaneously the three negatives required by his heliochromic process. The pictures exhibited are said to fully confirm his claims in regard to the reproduction of colors.

The New England Meteorological Society is to hold a loan exhibition of apparatus and photographs in Boston, in January, 1889, and invites contributions of photographs as follows: Class 1, photographs of lightning; Class 2, photographs of clouds; Class 3, photographs of meteorological apparatus and observatories; Class 4, photographs of buildings demolished by wind, tornado tracks, overturned trees, etc. These should be sent to A. Lawrence Rotch, Physical Department, Massachusetts Institute of Technology, Boston, by mail, not later than January 12, 1889, and preferably immediately. To each should be attached a card with the name and description, and the name and address of the contributor. The sender's name and address should also be placed upon the outside of the package. Every contribution will be acknowledged upon its receipt, well cared for, and, unless otherwise ordered, returned at the owner's expense and risk at the close of the Exhibition. Communications regarding the Exhibition should be marked Loan Exhibition, and addressed to A. Lawrence Rotch, Blue Hill Observatory, Readville, Mass.

[*From the Photographischis Archiv.*]

CONDITION OF THE SILVER IN THE PHOTOGRAPHIC PICTURE.

BY A. E. M. SCHLEISNER.

Some years ago I had opportunity to examine several photographic silver prints, showing some white spots of pretty good size, which had appeared in the course of time. It was the general opinion that the cause of these spots was to be looked for in the material used for pasting, but such could not be the case, as glue had been used and proved to be completely neutral. It had rather the appearance as if the pictures had been sprinkled with some acid. When the pictures, from which the paste had been thoroughly removed, were treated with pure muriatic acid, the image disappeared entirely. This did not demonstrate the presence of silver in a reduced metallic state, and induced me to make some tests about the condition of silver in the photographic picture. Pure metallic silver, as known, is not affected by muriatic acid. It seemed now interesting to see if the deposit, which can be precipitated from silver salts by different means of reduction, might be attacked possibly by muriatic acid, or changed entirely into chloride of silver. The latter method proved not successful, but I am able to state that the precipitate does not consist exclusively of metallic silver, on the contrary, it is to be accepted that very often it contains a quantity of silver-suboxide, particularly if precipitated from alkalic solutions.

It is known that the silver is precipitated in various shades of color, lying between light-gray and black. If precipitated chloride of silver is reduced by zinc and a diluted acid, absolutely pure metallic silver is obtained in a finely divided condition, the color of the precipitate being of a light-gray; but if silver is precipitated in the wet way by means of organic reduction (the best in alkaline solutions), precipitates will be obtained, partly by the same means of reduction, partly by different ones, but at a different degree of concentration of the solutions, which show color-shades of light brown, brownish-gray and gray-black to black.

Several methods are known to precipitate the silver in a cold and wet way, as a metallic mirror upon glass.

If, for instance, a nitrate of silver solution is taken and diluted, liquid ammonia added carefully in drops, so that the first developed precipitate will dissolve again, and to this ammoniacal silver solution, a solution of potassio-soda tartrate (Rochelle salts) is added, and the mixture is made a little alkaline by addition of some drops of caustic soda, it will not take long before the silver will separate on the surface of the glass as a compact metallic mirror. If the solution is too concentrated the silver is precipitated as a powdery deposit, but if suitably diluted (one part silver salts and about the same quantity of Rochelle salts in 200 to 500 parts of water), it will always be separated as a compact mirror. If the precipitations have been proceeded with in the correct manner, the silver, which is just in contact with the surface, will show a clean, metallic reflecting surface, but if the solution is poured out of the glass, and the inner side of the silver coating is inspected, it will show itself as a matt and gray surface. I precipitated silver in the way mentioned, poured the solution out of the glass, rinsed the same several times with distilled water and boiled the glass with ammonia water. The silver coating suffered no change from this, and no ammoniacal oxide of silver combinations, similar to Bertholet's fulminating silver, formed. Finally I rinsed liberally with distilled water. After this treatment it would be accepted that every trace of soluble silver salt was removed. The silver coating was now treated with pure muriatic acid; the inner matt side became white at once, and the whole coating separated from the glass; the silver floated leaf-shaped in the solution. The leaves or scales had on one side a metallic gloss, but on the other side they looked exactly like choride of silver. The muriatic acid was poured off, and the dissolved silver scales treated with ammonia, whereby the white side of the silver was changed and had now the appearance of white silver. The ammonia solution was diluted with water and neutralized with acetic acid, when chloride of silver separated. It is, therefore, evident that besides the metallic silver another silver compound, insoluble in water and ammonia, had separated—probably a low degree of oxidation of the silver, which was divided by the muriatic acid into metallic silver and chloride of silver.

Three oxides of the silver are known: Silver suboxide $Ag_4 O$; oxide of silver $Ag_2 O$; and peroxide of silver $Ag_2 O_2$. The existence of the first was first demonstrated by Wöhler, in 1839. The discovery of the silver suboxide took place while examining oxalic, citric and other organic silver salts. While the pure oxide of silver loses all oxygen by reducing actions, it appeared that oxalate and citrate of silver give, by the same treatment, only about one-half of the oxygen, and oxalate and citrate of silver will form, which dissolves only with great difficulty in water. The solution has a reddish brown color, and from these silver suboxide is precipitated by caustic potash as a bromide powder, which becomes black when drying. A similar reduction has been observed by Rautenburg with other silver salts, also inorganic ones. Weltzein has found that a low degree of oxidation of silver forms when the silver scales are treated with hydrogen peroxide.

The glossy metallic surface becomes gray-white—quite as much as is frequently observed in the separation of silver as a medium for mirrors—while a hydrate of the silver suboxide dissolves in the solution.

Mr. Otto von der Pfordten has published lately his investigations on the existence of silver suboxide. While in his first publication he was of the opinion that he had found the silver suboxide, he has arrived now at other results after later investigations. He accepts now the body which he took for silver suboxide as a hydrate of silver.

Many chemists still doubt the existence of the silver suboxide, discovered by Wöhler; but no matter how it may be, our knowledge of the action of the light upon the silver compounds in the photographic plate and in the photographic papers is unfortunately still very imperfect. It is a fact, that the light is capable of separating metallic silver from several silver compounds without the aid of any organic compounds, but of the processes of these proceedings we have only a very incomplete knowledge. Here it may be remarked, that pure sulphate of silver has proved to be very indifferent towards the light. If pure chloride of silver is precipitated and exposed to the influence of direct diffused sunlight, chlorine will always be developed, which can easily be proven by the ordinary reagents, for instance, diluted iodide of potassium and starch paste, sulphurous acid and barium chloride, etc., bromide and iodide of silver will suffer corresponding new formations. The violet body forming the chloride of silver is oftentimes taken for a chlorine compound of the silver, while others assert that it is a mixture of chloride of silver with finely divided metallic silver. Such a silver subchloride is known though, which is produced by treating silver suboxide with muriatic acid, or by precipitating silver subcitrate with sodium chloride; it is a brown body, which becomes black when drying. But whether this body is identical with the compound separated by the light or not is not known. Even if we accept that the photographic picture contains metallic silver, probably mixed with larger or smaller quantities of a low oxide of silver, or with sulphide of silver, formed during fixing, the later complete disappearance of the picture under the influence of the light and atmosphere remains still a problem to be solved. Possibly sulphide of silver may gradually form, which is oxidized to sulphate of silver by air containing ozone.

DETERMINATION OF THE OBJECTIVE OPENING.

BY F. STOLZE.

(*Continued.*)

TABLE OF THE EFFECTIVE OBJECTIVE OPENINGS *d*, of a landscape lens and a double objective, if the total focal distance is 50 c.m. each, the diaphragm diameter 10 mm. for each, the diaphragm distance 25 mm. and 50 mm. respectively, and the front lens of the double objective has a focal distance of 100 c.m.*

DISTANCE OF OBJECTIVES.		INFINITY.	1000 m.	100 m.	10 m.	5 m.	4 m.	3 m.	2 m.	1 m.
		mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.
Landscape Lens	d = effective opening.	10	10.0005	10.003	10.025	10.05	10.06	10.08	10.13	10.26
	d^2 " "	100	100	100.1	100.5	101.0	101.3	101.7	102.5	105.2
Double objective	d = effective opening.	10.526	10.526	10.521	10.47	10.42	10.39	10.33	10.26	10
	d^2 " "	110.8	110.8	110.7	109.6	108.5	107.9	106.7	105.2	100

---

* In the above table the computation has been conducted with the case, where *A* is equal to double the focal distance of the lens-system, that is, where object and picture are of equal size. It is clear that in enlargements the proportion will continue in the same manner, and that an equal diaphragm opening will then result in a considerably larger effective opening with landscape lenses than with double objectives.

As seen, the effective opening will become equal to the diaphragm opening in double objectives, as soon as object and picture are equally distant from the objective, while for landscape lenses this will be the case when $A =$ infinity. As from this point a growing of the effective opening will take place, with landscape lenses in the decrease of A, with double objectives in the increase of A, they must have for any value of A an equally effective opening, which takes place in the above case for A between 1 m and 2 m. The figures given in line d^2 make it possible to gain proportionate figures for the time of exposure equally at A.

The larger the value of "a"— the distance of the diaphragm from the front lens—so considerably much more is the influence of the opening value for infinitely distant objects. For the above double objective it amounts when $A =$ infinity, as one can see, $0{,}526\ mm = d - o$. For landscape lenses on the contrary the influence will be felt only at the minimum of A, and is generally less than the former. It appears most prominent in portrait objectives of the Petzval construction, their diaphragm distance in proportion to the focal distance being very considerable. Mr. Miethe gives an example of this kind, where $o = 27.23\ mm.$ $F = 282.33\ mm.$, and $a = 55.2\ mm.$ This gives $d = \frac{282.33 \times 27.83}{282.33 - 55.2}\ mm. = 33.83\ mm.$ What an important influence this increase of the effective opening has in regard to the ordinary diaphragm diameter generally applied, is shown, if both values are formed into a square. One obtains in that way $o^2 = 741.47$ and $d^2 = 1144.47$ showing that $\frac{d^2}{o^2}$ is $= 1.54$ and that therefore the light power of the objective is more than one half larger than ordinarily might be accepted. But if the value of a, in proportion to F is very small, d will also be very little different from o, and in practical work the difference may be neglected without any essential faults.

Very much to be recommended in place of the mathematical determination of the effective objective opening for $A =$ infinity, is the method applied by Steinheil for this purpose.

He sets the focus *ad infinitum*, exchanges the ground glass with a screen, into which has been cut a hole of 3 to 4 *mm.* diameter, exactly in the center, where the objective axis meets the same. Behind this hole is placed a flame, the lens mounting is covered with a piece of tissue-paper, and now the luminous circles are measured, which by insertion of the different diaphragms, are drawn upon the tissue-paper by the rays, emanating under these circumstances parallel from the objective.

These figures have then to be carefully noted. The best and most correct would be, of course, if the opticians at last would come to the resolution, to stamp the same or their value in round figures $\left(\frac{f}{d}\right)^2$ or $\frac{1}{10}\left(\frac{f}{d}\right)^2$ upon each diaphragm, furnishing thus to the photographer the necessary proportionate figures for his exposures. The letter f signifies, of course, the focal distance of the whole objective.

* * *

All communications for the columns of the BULLETIN *should reach us on Monday preceding the day of issue, to insure their publication at that time.*

[*From the Photographic News.*]

THE PRACTICE OF NEGATIVE RETOUCHING.

BY W. E. DEBENHAM.

No. 3.—Preparing the Negative to Receive the Work.

Such first rudimentary attempts at retouching as were involved in the practice of filling in spots and blemishes in the negative were, as has been previously mentioned, commonly made with water color. It was found, however, that blacklead pencil possessed great advantages as regards facility of execution, evenness of covering, and as not picking up nitrate of silver from the sensitized paper in contact with the plate.

As, however, a pencil will make but a faint and uncertain mark upon the ordinary varnished surface of a negative, and upon most gelatine films when not varnished, some preparation of the surface becomes necessary, in order that the blacklead may "take" readily.

There are several distinct methods of preparing such a surface, each method successful in its way, although for certain negatives one method may be more useful than another. One plan is to coat the plate with a varnish that dries with a matt surface somewhat resembling ground glass, and offers a "tooth" for the pencil to work upon. The formula for such a varnish runs as follows:

Gum mastic	½	ounce.
Gum sandarac	½	"
Ether	8	ounces.

When the gums are dissolved, the solution is filtered, and then benzole is added in the proportion of from one-fourth the quantity of ether that has been used, up to nearly equal parts. With some samples of material more benzole must be added to produce a particular grain than with others. In any case the more benzole the coarser is the grain. The use of matt varnish was never very generally adopted, and is now mostly confined to cases in which it is desired to put work upon the back of the glass upon which the negative is taken.

Another method for preparing the surface of a negative for retouching consists in rubbing or grinding with an abrading powder, so as to get a "tooth" sufficient to take the work. Cuttle-fish bone and powdered pumice have been extensively employed, but of the two the former is to be preferred as less harsh. It is desirable not to buy the cuttle-fish in the form of powder, as sold by the chemist, lest there should be in it portions of the harder shell or skin; but to obtain the fish-bone in the lump, and to scrape out of it all the fine soft part, leaving out the skin or shell. The powder may be sifted through a very fine hair sieve or through muslin; enough is easily prepared at once to last a long time. A little of the powder is rubbed with the tip of the finger over the parts of the negative requiring retouching, until an even matt surface is obtained. It is generally recommended to rub with an up and down, rather than with a circular motion, but either method may be employed. When the surface is sufficiently abraded the powder is dusted off with a brush, and the negative is ready for retouching.

Another powder that has been very extensively and successfully used for preparing the surface of a negative is that of common resin. This also should be sifted, although it is not necessary for the sieve to be a very fine one, as the material is so soft, and readily crushes under the finger. With resin powder, after the work is executed, the plate may be warmed until the dull surface which the grinding has given disappears, or nearly so. The touching is thus fixed to the plate by the melting of the trace of resin left on the surface of the film.

The abrading process with resin or cuttle-fish powder may be employed either upon the gelatine film itself, or upon the ordinary negative varnish; the latter plan is, however, the more usual. If the film itself is rubbed, care must be taken not to rub so much as to remove any appreciable amount of the deposit forming the image; and with some films containing a small proportion of gelatine to the bromide of silver, this may not be easy to avoid. The mere fact of roughening the surface imparts a little additional opacity to the negative, so that shadows will not print through quite so clear, and too dense high-lights will be rather aggravated than otherwise. With resin powder this opacity almost, if not entirely, disappears on warming, and with either powder used upon the film before varnishing, it disappears upon the application of the varnish. In some cases, however, the added density is an advantage. In a thin and under-exposed negative the flesh in shadow will print rather lighter from the roughening treatment, something like the effect which is obtained by the plan often adopted in such a case of putting a thin wash of color on the back of the plate. The extra density conferred by roughening will be seen very disadvantageously if the rubbing be continued on to the background, when a patch of light will be seen extending as far as the roughening process has gone. Still another method of using the resin powder is to rub the plate as already described, and then to warm it before retouching. As soon as cold it is ready for the work, which it will take in a very satisfactory manner.

Although the rubbing method has been very much superseded by the use of such a medium, as will presently be described, it is really a good method, and excellent work has been done in this way. For inexperienced hands it is especially to be recommended, and there is less danger than when a medium is used of making too dark a stroke.

We now come to the plan which is in most general use at the present time for preparing the surface of a negative to receive the work of the pencil, the application to the film of a resinous or gummy solution called a medium. Several formulas for the preparation of such a medium have been published, of which some are excellent, while others give so much solvent in proportion to the gum as to make too thin a solution. Some, too, contain an unnecessary complication in the mixture of gums. The writer remembers to have seen a receipt which was thought very highly of, as being that of a very skillful worker, and no doubt the medium made according to it was good; but there was, in addition to several other gums, one which is insoluble in the liquid (turpentine), while of the active ingredients one was resin and another Venice turpentine. As the latter substance is now generally prepared by the chemist by mixing resin and turpentine together, the unnecessary complication of the formula is obvious.

One of the first formula given for making a retouching medium consisted of balsam of copaiba thinned with turpentine. Two parts of turpentine to one of the balsam make a solution that works very satisfactorily. It is slower in drying than some other mediums, and on this account is perhaps not quite so suitable when the negative has to be retouched immediately that it is prepared, and put out to print directly the work is finished. On the other hand, if the work upon the negative is not finished at once, but may have to be put aside till the next day for completion, the copaiba medium is very suitable, as the pencil will still take very well, which is not the case with all mediums. Canada balsam may also be used, but will require rather more turpentine—say four parts of the latter to one of the balsam.

Of the gums that have been used for making medium, common resin and gum dammar have probably been the most largely employed. The following formula is exceedingly simple, and gives a medium which, in the experience of the writer and others, works thoroughly well when the negative is to be retouched within an hour or so, and not put away for a day or more, after which time, although work may be put upon it, it will be with some difficulty :

Yellow resin	1 ounce.
Turpentine	5 ounces.

Dissolve and filter.

Another formula :

Gum dammar	1 ounce.
Turpentine	5 ounces.

A convenient way of dissolving gums is to make a little bag of coarse muslin to contain the gum, and let it hang in the vessel containing the solvent, just below the surface. For making a pint or so of medium, a pickle bottle will be suitable, and the bag may be long enough for the top of it to be just nipped and retained in position by the cork. For smaller quantities a wide-mouthed bottle of the pomade kind answers very well.

The medium, if containing gum, should be filtered through paper. With balsam and turpentine alone this may not be necessary.

A very good medium for general use may be made as follows :

Gum dammar	3 ounces.
Turpentine	18 “

Dissolve and filter, and add—

Balsam of copaiba	1 ounce.

Another very similar in use :

Yellow resin	3 ounces.
Turpentine	18 ounces.

Dissolve, filter, and, as before, add—

Balsam of copaiba	1 ounce.

A medium that comes to about the same thing as the resin medium, but may be more quickly mixed, is—

Venice turpentine	1 ounce.
Turpentine	2 ounces.

If slower drying is preferred, part of the Venice turpentine—say one-third—may be substituted by copaiba balsam.

Those who do not care to be at the trouble of preparing the medium will find several in the market which closely resemble in working those made by one or other of the foregoing formulas.

Any of the mediums given may be used either upon the gelatine film itself, or on the varnish. A small quantity is applied with a clean soft rag, and rubbed until the coating is even. Too much must not be removed in the rubbing, especially if the negative has been varnished, or the pencil will not take properly. The negative is then generally left for a few minutes for the turpentine to evaporate, and the medium to become hard and dry; but for some purposes, as will be mentioned farther on, the writer prefers, especially if it be a quick drying medium—*i. e.*, one without balsam—to commence the work at once.

HELIOCHROMY.

BY FRED. IVES.

[Read at the Stated Meeting of the Franklin Institute, Wednesday, November 21st.]

In my lecture on "Some Recent Advances in Photography," delivered before this Institute in February last, I briefly described and illustrated a method devised by me for producing photographs in natural colors. I now have illustrations of the process, comprising a sufficient variety of subjects to more fully demonstrate its capabilities and value.

I claimed for this process that, unlike any similar process yet suggested, it was based upon a true conception of the nature of light and color vision, and was a strictly scientific method of accomplishing the object sought after—which is to produce, by an automatic process, pictures which counterfeit not only the light and shade but also the colors of all objects which may be photographed.

I explained how some others who experimented in this direction failed, because they built upon the false theory that there are only three primary colors of light. I recognized the fact that there are, strictly speaking, thousands of primary colors, but also that all colors, whether simple or compound, may be counterfeited to the eye by means of three type colors, separate and mixed in different proportions. I assumed that we might counterfeit all the colors of nature in a photographic picture, by making each ray of simple color select automatically, in the operation of the picture-making process, such a type color or mixture of type colors as will counterfeit it to the eye, and showed how this can be accomplished by means of photographic plates made sensitive to all colors, and exposed through compound light filters, which are suitably adjusted by experiment upon the spectrum itself.

For the mechanism of the process and some demonstrations, I refer to my original communication, which appeared in the *Journal of the Institute* in May. I believe the problem had never before been stated with reference to the possibility and necessity of representing most of the primary colors by color mixtures, which, though not the same, produce the same color-sensation.

In order to make clear the fact that my plan of operation is in accordance with what is now recognized as the true theory of the nature of light and color-sensation, I make the following quotations from a recently published text-book on "Color," by A. H. Church, M.A., London:

"Young's theory does not assume the existence of three primary colors, but of three primary color-sensations; a very important distinction.

"Every ray of differing refrangibility in the visible part of the spectrum is, in one sense a primary color, for it is simple, and excites a definite sensation. But there are many reasons, mainly connected with the structure and functions of the eye, which have led to the selection of certain colored lights—generally three in number—as yielding primary color-sensations. This primariness is then not objective, but subjective in respect of human vision.

"Young's theory of color-perception amounts essentially to this, that in each elementary part of the retina of the eye, there is, at least, one set of three different nerve fibrils, each of the three fibrils of a set being especially adapted for the production of its own specific color-sensation, yet in a less degree of the two others. Thus the receptive structure of the retina as a whole may be said to consist of an immense number of nerve fibrils of three orders, what we may call red fibrils, being particulary acted upon by such long light waves as those in the red, but being also stimulated in a minor degree by the shorter waves in the green, and still less by those in the blue, the green fibrils will respond most actively to green waves, and in some measure, also, to red and to blue waves; while the blue fibrils will be most excited by the blue rays, though not uninfluenced by green and even by red rays.* It follows that when all three kinds of nerve fibrils are equally and simultaneously affected, the complex sensation of white light alone is produced.

"Colored lights may be, and often are, compound, sometimes consisting of two, and often of many more differently-colored elements, although the eye recognizes but a single color in the complex ray. A striking instance is afforded by yellow. There is an elementary yellow in the solar spectrum lying on the green or more refrangible side of the line *D*. By no contrivance can we optically decompose this spectral yellow, to which belongs a definite wave-length. But there are many compound yellow lights—lights which give us, as the sum of the simultaneous visual impression of their several components, a sensation of yellow not to be distinguished by the brain from the simple yellow of the spectrum. Such a compound yellow may be formed by throwing on the same portion of a screen a part of the red light and a part of the green light of a pure spectrum. Similarily there is a pure and simple blue in the spectrum, but a blue indistinguishable from this in hue may be obtained by mingling green and violet light."

Now, although I worked out my process on the simple plan of making each primary ray of color select from three type colors to counterfeit it; or, in other words, to produce the same color sensation, it becomes evident that in accomplishing this I have produced one negative by the action of solar rays very nearly in proportion as they excite the "red nerve fibrils" of the eye, another in proportion as they excite the green "fibrils," and another in proportion as they excite the "blue fibrils."† And in recomposing the picture by means of lantern positives and colored lights, I have employed those rays which excite most powerfully the corresponding color sensations.

Red, green and blue being the primary color-sensations, those colors of light are of course used in recomposing the heliochromic picture upon the screen; but when pigments are used instead of colored lights, owing to the fact that their combination adds shade to shade instead of light to light, the complimentary colors (something like Prussian blue, magenta-red and yellow) are required. In one respect, the diagram in my original communication seemed wrong to some, who, not noting this distinction between the two methods of reproduction, failed to observe that pigment reproduction colors were meant to be indicated, and that therefore it would be the deepest shadows of the corresponding negatives which represented those portions of the spectrum. I have to confess that the diagram should have been made to show these facts by itself; but it was at least made evident that by my plan of operation, the relative degree of representation of any part of the spectrum in any one negative, could be regulated at will to agree with the character of the pigment laid down by that negative.

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* "Helmholtz remarks, that the choice of these particular colors is somewhat arbitrary, and that any three could be chosen, which, when mixed together, would furnish white light. If, however, the end and middle colors of the spectrum (red, violet and green) are not selected, then one of the three must have two maxima, one in the red and the other in the violet; which is a more complicated, but not an impossible, supposition."

† "In *Modern Chromatics* (Rood), p. 114, will be found a diagram showing the supposed action of the spectrum upon the different sets of nerve fibrils, according to Young's theory. It has, however, been shown by actual measurement, that the curves of such a diagram should be shorter than was originally supposed, that the red fibrils are practically unaffected by blue light, and the blue fibrils practically unaffected by red light. A corrected diagram by Maxwell, which is reproduced on page 123 of the same book, very nearly corresponds to the distribution of intensity in some of my own sets of helichromic negatives of the spectrum.

The question has been asked whether the action of the primitive rays in selecting type colors to counterfeit them would secure also the correct representation of mixed colors. I conclude that it will only be necessary, in order to secure this result, to employ such type colors as represent the primary color sensations.

Admitting the theoretical soundness of my mode of procedure, which I believe I have fairly demonstrated, there remains only the question of practicability and commercial value to be considered. The process is practicable, if the same operations, repeated in the same manner, can be relied upon to produce pictures which counterfeit the light and shade and color of all objects. Three subjects which I shall show to-night, a delicate oil-painting, a brilliant Prang chromo and a beautiful sea-shell, were made with the same light, same camera, same preparation of sensitive plates, same set of color screens, same relative exposures and same development. They show a very great variety of colors, mostly compound in the painting and chromo, but pure spectrum colors in the sea-shell; yet the colors of all are alike faithfully counterfeited to the eye. Although there should be no question of the fact, I will here state that these finished results have been obtained without any retouching or artificial manipulation whatever.

THE LIGHTING IN PHOTOGRAPHIC STUDIOS.

BY P. C. DUCHOCHOIS.

(*Continued.*)

IV.

To resume: A picture is made of light and dark blended with intermediate tints, *i. e.*, half light and half dark.

Nothing is white in the face; all is more or less shaded, with touches of black in the most receding parts, and luminous touches on the predominant parts, as it appears in nature on the eyebrows, the nose, the chin, etc.

The part of the face nearest to the light should be the most lighted, with gradation to dark in the most distant part.

There must be one light only illuminating the whole picture. In a portrait, it is that which falls on the head.

Every light should have a focus or center of illumination brighter than the rest of the same light. In a portrait, the foci are on the predominant parts of the face as mentioned above. No light, no shade exists in nature without gradation.

The shadows should not be vertical nor horizontal, which is unnatural, of a bad effect, inartistic. Hence, whatever be the lighting, the light should fall at a certain angle on the model and be repeated on the back ground, but inversely, to produce effect by opposition of light and dark.

A picture wholly composed of lights and half-lights, darks and half-darks, appears weak, insipid, without character.

If it consists of lights and darks finishing abruptly, *i. e.*, without being blended by half-tints, it looks spotted, unfinished, and can be effective only when viewed at a certain distance. This manner is employed in decoration; in photography it is insupportable.

The illumination of the face being the subject, every other light should be subordinate to it, and no light should surpass or equal it in brightness.

The principal light should be repeated—not too often, nor by giving to the repetition the same importance—in order to break the evenness and give variety and color to the whole picture. This rule holds good in regard to the shadows. In groups, the repetitions are indispensable.

Melting the draperies or the accessories into nothingness in the dark is objectionable as a rule, but is sometimes resorted to for effects. Without sacrificing anything, vigor and brilliancy can be obtained by opposition of still darker shadows to define the outlines.

The shadows must be transparent and show the objects upon which they are projected, otherwise they look flat, heavy, unnatural.

By opposing light to dark, dark to light, relief, brilliancy and effect are produced.

Lastly, it is most important to distribute the light according to the features of the sitter, to preserve their originality.

V.

Having described the effects of light and shade and the rules to be observed, we must now study what should be the construction of the studio or glass room, and how the light plays on the sitter in order to produce these effects.

The painter disposes the light so that it falls on the model at an angle of 45 degrees. It is the classic lighting, and answers admirably to show the *modelé*, and that is all which is necessary; for the artist creates in his imagination a certain scene with certain effects of light and dark, and reproduces it with his palette without regard to the lighting of the model in his studio, although guided by it to some extent; his previous studies and observations of nature being the real guides.

Not so with the photographer. He can reproduce only what appears before him, and, therefore, he should direct, alter, reflect the light on the model to produce the picture he has conceived; in a word, he should design a natural, living scene, and then mechanically—or nearly so—fix this scene projected at the focus of his optical apparatus by chemical means. The first part of this belongs to the artist, the other to the photographer.

Let us place a model in a studio lighted from above only; we observe that the wrinkles of the face are exaggerated, giving an older, hard appearance to our model, the eyes are sunken, shadows objectionably dark are cast under the nose, the lower lip and the chin, whilst the hair, strongly lighted, appears gray.

On the other hand, if the model be lighted entirely by a side light, the *modelé* of the face is injured, and, consequently, the features of the model much altered; the eyes are dull for want of contrast, the delicate shading of the mouth disappears, the lighted side is flat, and the shaded one, without form, in a deep shadow, the whole face having a hatched shape.

Therefore, to obtain a more suitable lighting, the studio should be constructed with a top and side light, in order to combine the two lights in just proportions.

The studio represented in the annexed figure is generally recommended by artist-photographers:

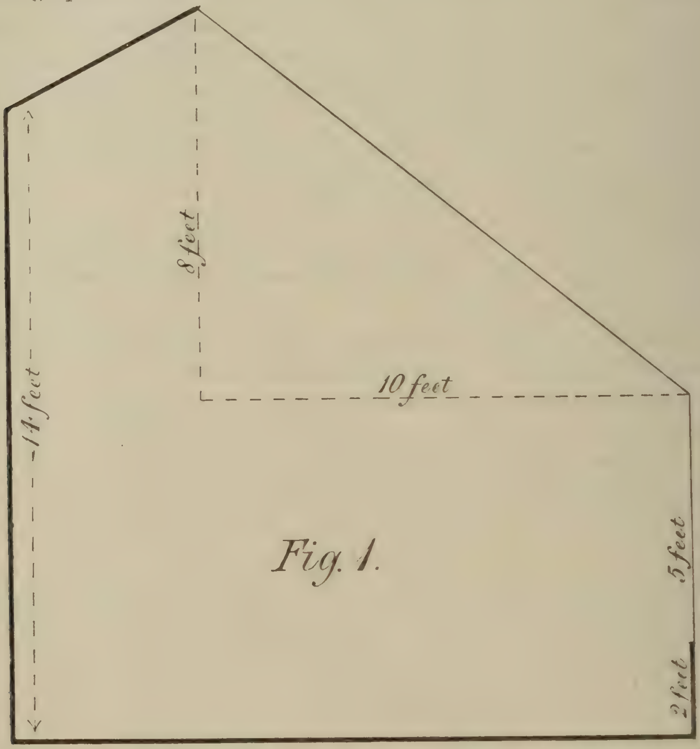

Fig. 1.

The room is 14 feet wide and 14 feet high. The pitch of the glazed roof is about 47½ degrees. The side light commences 2 feet from the floor, and rises 7 feet above, being 14 feet wide, which is more than necessary. The room should be as long as possible—at least 40 feet—to allow the use of long focus lenses for groups, large figures, etc., in order to avoid exaggerated foreshortenings, one of the great shortcomings in photography. As to the glazing, clear glass is generally employed. Ground glass, polished side outward of course, is selected to practically get rid of reflections, specially from brick houses when an open sky cannot be secured, and even then—for the top light at least—it will produce a light softer, more pleasant and less tiresome to the eyes of the sitter. In Paris nearly all the studios are thus glazed; moreover, it does not much diminish the strength of the light, as one may be led to suppose.

VI.

To direct and regulate the light a system of spring shades, curtains or shutters should be adapted to the glazed side and roof of the studio.

The most simple and less costly arrangement to control the side light consist of narrow curtains, arranged in sections to mask partly or entirely the light, and sliding on rods or wires. This arrangement is well-known and explains itself.

The curtains should not be white nor blue, but of a dark gray greenish color, as well as the wall of the studio. All reflected actinic light should be avoided in the studio, except that managed by the artist.

For the roof, curtains may also be employed. They are troublesome to organize and still more troublesome to work with cords, pulleys, etc. Mr. Schaarwächter, one of the leading photographers in Berlin (Germany) has devised an ingenious system to move these curtains with the greatest ease, which Mr. Baden Pritchard thus describes: *

"In the first place Herr Schaarwächter has no lines or cords for the moving of the blinds or curtains. These, of blue linen, hang in very loose festoons from the roof. Brass wires run the whole length of the glass roof; they are parallel, and, perhaps, 2 feet apart. They are kept taut—this is necessary—in the same way, pretty well, as our wire fencing; that is, each end of the wire passes over a roller (*a*), and then round a wheel furnished with a cog (*b*). On the face of the cog-wheel are two holes (*c*) into which a key, or winch, fits for the purpose of keeping the wire taut; the arrangment can be easily understood by our cut, *Fig.* 2.

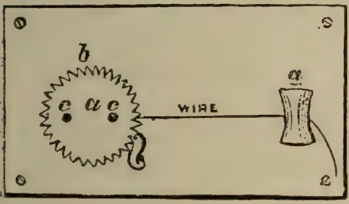

Fig. 2.

It is necessary that brass wires be employed, and not iron, for the latter rusts, and then loses its smoothness, and unless the wires are smooth, the curtain rings will not run upon them with ease and facility, for, as we have said, the curtains are quite loose and baggy.

Here is a traverse section of the roof, *Fig.* 3, showing how the wires are fitted, and how the curtains are arranged.

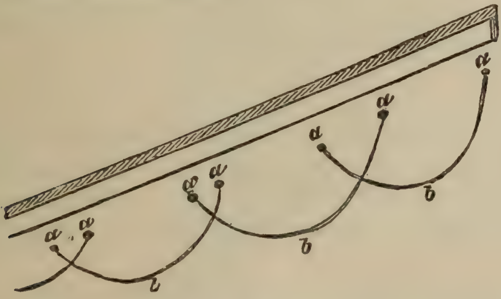

Fig. 3.

a, *a*, *a*, *a*, are sections of wires, *b*, *b*, *b*, the curtains, which are so hung as to overlap one another. Herr Schaarwächter simply uses a light bamboo pole to manipulate his curtains. He pushes the curtains on this part of the roof, or makes them cover that part. The rings on the stretched brass wires move with exceeding facility, and a more simple plan of manipulating curtains to affect light and shade cannot be conceived."

Another excellent arrangement to direct the light on, to, or away from the sitter, is a system of shutters about two feet wide, revolving on pivots or on hinges. They may be made of tin or zinc, painted white on the side facing the light, and of a neutral color on the other; or they may consist of very light frame work, with calico stretched over them, and papered white and gray-green, as mentioned above.

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* The Studios of Europe, authorized American edition, p. 228, New York: E. & H. T. Anthony & Co.

Whatever they may be, those fixed on the glazed roof especially, should move in sections to lighten any part of the studio at will, by means of center pieces fixed to each other, and when shut they should project one over the other; this arrangement is similar to window blinds.

Generally the pitch of the roof is not so inclined as to prevent the sun shining into the studio at midday, in the morning and evening in the long days of the fine season, whereby the dusts, always floating in the air, being illuminated by the direct rays of light, form a mist in the studio, which obscures the model, producing on the negative an effect resembling a chemical fogginess, for which it is often mistaken.

This should be obviated; furthermore, when the sunbeam does not fall between the model and the camera, as in the case above, it is reflected by the floor and walls of the studio, and thus badly interferes with the lighting of the model.

Several contrivances have been devised to that end, such as a large frame work, like blinds, constructed on the roof at the end of the glazed part, or awnings similarly arranged; which latter is, by-the-by, objectionable on account of the wind, and necessitating to be moved by cords and pulleys.

Light narrow frames covered with mineral paper of good quality (the ordinary kind rapidly turns yellow), revolving on pivots and placed near the glass, answer quite well; moreover, they soften the light, intercept very little of it, and can be let to hang down when the sun no longer shines on the glazed roof. This arrangement is suitable when the roof is not glazed with ground glass, and the light controlled, not by curtains, spring shades, shutters, etc., but by movable screens, and is even preferable to ground glass, for it permits using the light from the clear glass to obtain a brighter illumination.

VII.

We have just said that the light can be regulated by movable screens as well as by curtains, shutters or other contrivances fixed to the glazed side and roof of the studio. Indeed that is an excellent manner, perhaps the best, to control the light to obtain delicacy of details together with vigor and effect in photography.

Place a model under the light at a certain distance from the side light as is proper, and no matter how the light is distributed over it by the curtains or shutters, one side is always brightly lighted while on the other too deep shadows are apparently projected. Look at the face of the model, you can hardly see any details in the shadow side, but interpose a tinted cardboard near the lighted part so as to obscure it, immediately all the details in that shadow become visible. Hence it is evident that it is not the shadow which is too dark, but that it is the lighted part which dazzles us by its brightness.

This effect is equally produced on the negative. It will even be exaggerated, for, as you well know, strong and weak lights do not impress the silver compound according to their relative value, the former acting more energetically than the latter in comparison.

Therefore the light should be better distributed to avoid this objectionable opposition of light and dark, not by turning the face to the light, which flattens it; not by white reflectors to throw light on the shadow, which destroys the *modelé* and projects a false light—one which comes from another direction—but by screens to soften certain parts by forcing, so to speak, the light to be diverted from its direction and diffuse on the model.

Various movable screens are employed to regulate the lighting. All those described further on have their utility. They should be at hand in every studio.

To prevent the light falling directly from above on the head of the model—and therefore to project deep shadows under the eyes, etc., or to cast a shadow on the hair, in order that the model does not look light-headed, a *head-screen* is employed.

It is simply a wooden frame, about two feet square, covered with pale rose muslin and fixed to a success head-rest, which permits turning it at any angle, sideways or upward, and to place it at a certain distance over the head of the sitter.

Next comes a screen about forty inches wide, six or seven feet high, over which is adapted with hinges, another light screen or canopy about forty inches long, which can be heightened to an angle of forty-five degrees, or lowered by means of an iron lead as seen in figure 4.

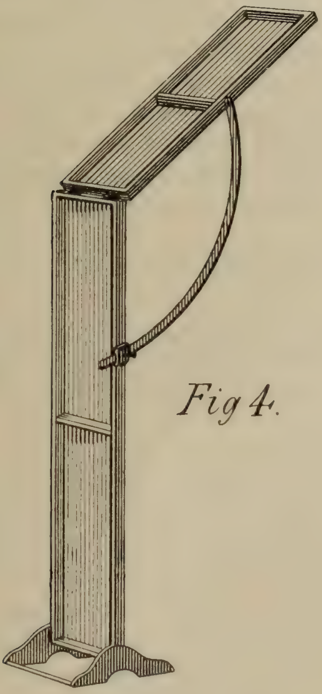

Fig 4.

This screen-canopy is covered with light rose muslin, very transparent on the side, and serves to control both side and top light instead of curtains.

Lastly, two narrow upright tinted screens should be provided with which to control the side light only.

As to the reflectors, two, about four feet high, should be at hand. They must move on pivots and be covered on one side with white calico to throw light on dark dresses, and on the other with a material of a non-attractive color to darken light dresses.

The *head-reflector* will be described further on.

(*To be continued.*)

A PERFECT SUBSTITUTE FOR GLASS AS A SUPPORT FOR GELATINE BROMIDE OF SILVER FOR USE IN PHOTOGRAPHY.

By John Carbutt, *Wayne Junction, Philadelphia.*

[Read at the stated meeting of the Franklin Institute, Wednesday, November 21, 1888.]

No sooner had the gelatine dry plate process become established, displacing by its greater sensitiveness and convenience the old wet and dry collodion method, than experiments were commenced to find a suitable substitute for glass, the weight of which has proved a great inconvenience to travellers, with the dread always present that their exposed plates or negatives might get broken; a dread, in many instances, only too painfully realized. Before proceeding to describe the material I have found to be a perfect substitute for glass as used in photography, I will briefly pass in review a few of the substitutes suggested and made use of, and note the objections to them.

In 1880, M. Ferrier, of Paris, patented a compound film of gelatine and collodion. The objection to this film was the unequal expansion of the gelatine and collodion, causing the latter to crack.

H. J. Palmer, M.A., of Liverpool, in 1801, proposed a film of gelatine and oxgall, with a second film of plain gelatine.

Stebbing, of Paris, produced gelatine bromide films on a pellicle of gelatine. Both this and the Palmer film proved defective from the liability of the film to expand while in the developing solution, sometimes to nearly double the area of the dry film.

Warnerke, of London, produced films of alternate layers of rubber and collodion.

Pumphrey, of Birmingham, as early as 1882, produced films on paper.

Morgan & Kidd, of London, coated paper for bromide enlargements, and the same was used for paper negatives. but the grain of the paper proved objectionable.

The late Walter B. Woodbury devoted a great deal of time in trying to produce a transparent paper as a support, when death overtook him. His partner, Vergara, took it up, and finally placed such films on the market, only to be shortly withdrawn, to be replaced by a film of hardened gelatine, the invention of F. C. Froedman, of Dublin. His method consists in mixing bichromate of potash with gelatine, spreading on glass, drying, exposing to light, washing in plain water, then bleaching in a dilute solution of sulphurous acid, again washing, drying, and coating with sensitive emulsion. The objection to this film is its extreme limpness when wet, and propensity to assume any shape but a flat one on drying. These were followed in America by the Eastman Company's paper negative, made transparent with castor oil, and while printing quicker than paper unoiled, the objectionable grain of the paper marred the result.

Next we have the stripping film of the same company, which up to the present time has proved the best substitute for glass, although in many instances the grain of the paper shows in the finished negative. The objection made by users of this material is the great risk of loss of negatives in the after process of stripping the exposed film from its paper support and the time occupied in the same. I will read from their instructions as published in *Science of Photography* (vol. I, pp. 11, 12):

Stripping.—Take as many sheets of glass as you have negatives to strip, each one a size larger than the negatives. Clean, and, when dry, coat with a rubber solution, which can be either be bought already prepared or can be made as follows:

Rubber cement	1 ounce.
Benzine	9 ounces.

Place the plates in a rack to dry until "dead," which will take about five minutes. Then flow with the following solution:

Plain Collodion:

Ether	1 ounce.
Alcohol	1 "
Gun-cotton	10 grains.

As soon as set wash under the tap until the greasy lines disappear. This is to remove the ether and alcohol. Then place the glass in a tray half full of cold water, keeping hold of one end with the left hand. Put the negative into the dish face down, press under the water, and guide the end nearest the hand holding the glass, so as to clasp the negative with that hand, then raise the end of the plate out of the water, thus allowing the water to carry the air from under the negative. Squeegee the negative down, which should be done with light pressure for the first few strokes, and then put it under blotting-paper with another sheet of glass over that, and a weight of say eight or ten pounds on it. Allow it to remain under pressure for ten minutes. Now take a tray half-filled with warm water at a temperature of about 110 degrees F., or such as will feel comfortable to the hands. The directions sent out with films, saying to use water at 120 to 140 degrees, I have found to be much too hot.

Place the glass plate with the negative thereon in the warm water, and, after gently rocking a couple of minutes, try one corner by picking it up with finger-nail or a pin. If it does not start readily do not try to hasten it, for as soon as the water has softened the substratum the paper will come off easily. After the paper is removed raise the plate from the water, wash off the remaining soft gelatine with a tuft of cotton or a camel's-hair brush dipped in warm water, and set the plate in a rack to cool. Do not change from the warm water to the cold too quickly, as a sudden change of temperature will frill the gelatine.

After the negative is cool place it in a pan of cold water, holding the fingers under one end of the plate. Take a gelatine skin and slide into the water, smooth side down. Clasp the end of the skin with the hand holding the glass, and with the other hand press the skin under the water. As soon as the skin is immersed raise the end of the plate slowly, which allows the water to carry the air from between the skin and negative.

In placing the skin on the negative do not allow it to remain in the water more than thirty seconds or a minute, as the water will soak out the glycerine, and the skin when dry will become brittle. To avoid this tendency it is well to put about ten per cent. of glycerine into the water used for that purpose, or perhaps better yet, in a solution of equal parts of wood alcohol and water, which may be kept in a bottle and used from time to time.

With a wet squeegee go over the skin carefully until all the wrinkles are removed, when allow the negative to dry thoroughly, and flow with plain collodion. As soon as this is dry, cut around the edge and peel from the glass. The rubber adhering can be removed with a tuft of cotton dipped in benzine.

The negative, when completed, has a coating of collodion on both sides. This forms a protection against moisture, and gives the negative greater flexibility.

The substance I have the honor to bring to your notice to-night is thin sheet celluloid, manufactured by the Celluloid Manufacturing Company, of Newark, N. J.

It is some three or four years since I first examined into this material, but the manufacturers had not then perfected the finish of it to render it available, and it is only during this year that it has been produced uniform in thickness and finish, and I am now using at my factory large quantities of sheet celluloid $\frac{1}{100}$th of an inch in thickness, coated with the same emulsion as used on glass, forming flexible negative films, the most complete and perfect substitute for glass I believe yet discovered on which to make negatives and positives, and without a single objection belonging to the substances previously enumerated.

The flexible films have been thoroughly tested in taking portraits, landscapes, and interiors. For the latter they are far superior to glass dry plates, as owing to the fine matt surface bearing the emulsion, halation is obviated.

Its weight, as compared with glass, is as follows: Twenty-four 5 x 8 flexible films weigh 7½ ounces, while twenty-four 5 x 8 glass dry plates weigh from 110 to 120 ounces, and its great merit does not alone lay in its lightness, toughness and flexibility, but in that its treatment in development, etc., is precisely that of a glass plate; there is absolutely no after-process required. When the negative is washed it is hung up by a spring clip to dry, and is then ready to be printed from, and owing to its thinness, can be printed from the reverse side, if the precaution is taken to use only vertical rays.

Makers of photographic apparatus are already producing light-weight holders to carry these films, and I have no doubt magazine holders will be produced, in which thirty to fifty films can be carried and exposed.

I have here several negatives made by professional photographers of this city, and prints from the same; the portrait by Mr. Gutekunst, the landscape views by Truscott, the flash-light groups by Rothengatter & Dillon, and the 8 x 10 transparencies, are on films coated with my transparency emulsion, while the lantern slides that will now be shown you are from film negatives on lantern transparency plates, both by contact and reduction in the camera. The exhibit, I think, you must concede, demonstrates that all can be accomplished on flexible films that has been done on glass plates.

OUR ILLUSTRATION.

The handsome silver print which we present to our subscribers with this issue of the Bulletin is from the studio of one of the best of Boston's fine photographers, C. F. Conly. We have yet to see an inartistic production from this studio. Every picture is well studied, carefully executed and finely finished, being, in fact, all models of photographic manipulation. They should be well studied by all who aim to excel in our art.

ANTHONY'S
Photographic Bulletin.

EDITED BY
Prof. C. F. CHANDLER, Ph.D., LL.D.,
Aided by ARTHUR H. ELLIOTT, Ph.D., F.C.S.
and a corps of practical assistants.

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E. & H. T. ANTHONY & CO., Publishers.

SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

REGULAR MEETING—NOVEMBER 13, 1888.

FLASH-LIGHT COMPOUNDS.—MR. SIMPSON'S PHOTOGRAPHER'S TRUNK.—QUORUM RESOLUTION.—DR. PIFFARD'S COLORLESS ORTHOCHROMATIC SOLUTION.

THE meeting convened shortly after eight o'clock, with *President* CANFIELD in the chair.

In the usual order of business, the minutes of the previous monthly meeting were read by the Secretary, Mr. Clarence S. McKune.

It was moved and seconded that the minutes, as read, be adopted, and the motion was unanimously carried.

Dr. H. G. PIFFARD made a preliminary communication concerning a new method of orthochromatising plates.

He said that the usual procedure was to mix certain coloring matter with an emulsion, or else to bathe an ordinary plate with a colored solution. It was generally claimed, first, that a colored solution must be used, since it was the coloring matter which changed the film; second, that this colored solution must be capable of exhibiting absorption bands when viewed with the spectroscope; third, it had been claimed that the position of these absorption bands stood in direct relationship with the special color sensitiveness conferred on the plate. His own experiments, he said, negatived these propositions, in so much as he had been able to prepare orthochromatic plates giving results identical with those obtained from the use of erythrosine and cosine. He said that he believed that there existed other colorless solutions which would accomplish the same purpose, and he hoped to be able to present the matter in full detail at an early day. There were two ingredients in his colorless solution, which were also used in the color solutions, and he would leave the members to guess what they were.

He then exhibited a negative prepared with erythrosine, in which the yellow, green and blue had equal values, or six differences in the effect of six different colors. He also exhibited a negative prepared with the colorless solution, which was identical with the former. These he thought proved that it was not necessary to have a colored solution to obtain an orthochromatic effect.

The *President*.—All of you who have experimented in this direction will be able to appreciate the results of Dr. Piffard's demonstrations. In relation to the flash-light powders, possibly, Mr. Newcombe will kindly show his processes.

Mr. NEWCOMBE, responding, said: I will ask the Doctor to lead in the contest.

The lights were turned down, and Dr. Piffard then exhibited his new flash, and said that it is a light which contained no magnesium, but consisted merely of a few grains of aluminium. It flashed much quicker than magnesium, and was useful in taking pictures of babies, or moving objects. Its cost was $2.50 an ounce, which would preclude its general use at present.

Mr. NEWCOMBE—I have here an actinic compound, which, though not so expensive as Dr. Piffard's, I shall hope to prove to be of the same usefulness. There have been recorded of late a great many accidents, and even loss of life from the use of explosives and poisonous compounds, and I want to caution you against anything of that kind. Three times, recently, people have lost their heads and their lives through the explosions of flash-powder compounds. I have here a magnesium cartridge, which I shall demonstrate to you as giving a pure, white light, being entirely unexplosive and non-poisonous. I want it on record that I have eaten one of these cartridges; and as I want to prove that it is not poisonous, I now eat this 40 grain cartridge. (Mr. Newcombe eats the cartridge.) (Laughter.) I want to prove that it is not explosive. I will put a cartridge in this mortar and pound it as hard as I can. (The speaker pounds the cartridge, which did not explode.) So you see, the pounding has no effect on it. As regards the eating or pounding, it is something I should not want to do in any other case with any other compound. Now, as to the lighting qualities, I leave you to judge from the picture which we hope to show you soon. I have here a magnesium reflector. There is in the trough a new improvement added to the stand. I shall put in it 70 grains of the compound. While Mr. Smith is getting a focus, I would like to call your attention to a new way of putting up ingredients for a developer, just introduced. As you see, the pyro is put up in black capsules, and the carbonate of soda in white capsules. For use, you empty each in about a teacupfull of water, and your developer is thus ready for immediate use. It forms a most convenient article for the traveling photographer. I will distribute this among the members for their trial.

Here the picture was taken, considerable smoke rising; after a while, Mr. Newcombe showed a most perfect negative, the result of the flash, made on one of the new celluloid transparent films.

The President—The next thing in the programme is an exhibition, by Mr. Charles Simpson, of his photographer's traveling trunk and its pieces of apparatus. If Mr. Simpson will kindly explain their usefulness, I think you will all find them very interesting.

Mr. SIMPSON immediately responded. He said: The trunk is 22 inches long, 14 inches wide and 15 inches high, taking a 5 x 8 view camera; also a 4 x 5 detective camera, with several boxes of plates, lamps, different kinds of chemicals, also clothing, and a cloth cover for changing plates. And there is last, though not least, a tray arrangement, made of zinc, which, as you see, fits into the trunk, and has a sink, waste and supply tubes, and faucet for running water. It is a very fair, though plain, article altogether. There is nothing fancy about it. It is for my own use. Last summer I developed about two hundred and fifty plates with it. There is, also, room for a tripod in the tray holding the clothes. It should be stated that the trunk was in outward appearance about the size of a state-room trunk used on steamships. When the cover is opened there is exposed to view the clothes tray, in which is also stored this tripod and tripod head. When the tray is removed, there is beneath a sheet of zinc, which is nearly level with the upper edge of the lower half of the trunk, and covers on a level the whole interior except in the center, which has a box-like depression about 8 inches deep, and large enough in size to hold the outer packing box of a 5 x 8 camera. When packed up this is where the camera is stored. The extended surface on each side of this improvised sink holds the lamp for developing, which in this case was a Tisdell candle-lamp (around which was thrown a pasteboard screen, having orange paper), on the bottles of chemicals, and the trays for fixing and washing. Just to the rear of the sink a faucet of peculiar construction is screwed in and connected by a rubber tube to the water supply on a shelf above. The syphon is started by sucking the water over with the mouth, then the tube is quickly pushed over the faucet, which gives a supply of water on tap. From the bottom of the sink a waste pipe runs through the bottom of the trunk to a rubber tube, which terminates in a pail resting on the floor. In the space underneath the zinc tray and sink (the latter being removable), is packed the 4 x 5 detective camera, boxes of plates, bottles and chemicals, &c. To use the trunk for changing plates a thick satine black cloth, provided with arm-holes, is set over the upright top of the trunk and fastened around the edges. The trunk rests on two chairs, one at each end, and the operator simply sits down in a chair at the center, and by putting his arms through the cloth, changes plates by the sense of feeling without any trouble.

Mr. Simpson continued: While travelling we know how difficult it is to test a few plates by developing; sometimes it is to preserve a few plates. We don't know whether we have exposed our plates right or not, or whether things go right or wrong. In fact until we get killed we don't know that fact. All you want when you are travelling with this trunk is to stop at a hotel, where you can get a couple of pitchers of water, and hotels which cannot supply you with a few quarts of water are not worth stopping at. These hotels will generally have shelving, clothes-closets or clothes-press, where you can place your pail or water pitcher, on the top, in this way (illustrating). You can hang up your pail or pitcher in this way. There is this faucet, which I now make fast here at the rear of the sink (illustrates). Now, then, all you have to do is to make your attachments and fire away. Here it is. (The speaker illustrates by running the water).

The whole affair is home made; but it answers my purpose. Anybody is welcome to copy it.

In answer to a question as to the construction of the faucet, he said "I got hold of a gasfitter, and he made this faucet for me out of gas fixtures. A specially made cast brass faucet would cost $15, while this was very cheap. In regard to darkening the room, I will say that when I stopped at the seashore, last summer I had a south room and the sun came into it all day long. The sun shone right against the window. I had two cloths, just as you see these here [holding them up], and I hung them over the window. I drove in the window frame a half a dozen small tacks, and all I had to do was to run the cloth over on these tacks, having little brass rings screwed on the ends. In case of strong sunshine, I had a cloth of this kind doubled. You could not see through that. It is impossible; and it is perfectly safe. I can go into any room in daylight and, with perfect safety, develop with this."

Mr. BEACH—What kind of cloth is that?

Mr. SIMPSON—This is black satine, and cost thirty-four cents a yard. I will leave it here, and I will be glad to furnish you with any information you may desire from me.

The *President*—We are all indebted to Mr. Simpson for bringing around here his contrivances, which are of a very excellent quality; and I would suggest that the members now present tender a vote of thanks to Mr. Simpson for his kindness.

A vote of thanks to Mr. Simpson for bringing his trunk to the meeting and explaining its usefulness was moved and seconded, and unanimously adopted.

The President stated that Mr. Beach had a solution of hydrochinone he would speak about.

Mr. Beach remembered that over a month ago he received a few grains of American-made hydrochinone, made by the Herf & Frierichs Chemical Company of St. Louis, Mo., which was claimed to be chemically pure. He at once tried it and found that it dissolved in a solution of sulphite of soda and cold water very readily in, perhaps, two or three minutes. It developed lantern slides about as fast as oxalate and iron, and produced negatives of superior quality.

The solution he exhibited had been standing for over a month and was nearly colorless.

Mr. WAINWRIGHT said that he might mention that he had a solution of hydrochinone which had been mixed for months, and which he had successfully used. Three or four days ago he developed a negative with the same solution. It worked perfectly satisfactorily, except that its action was a little slower than when fresh. He exhibited a number of 6½ x 8½ negatives, made on stripping films, which were very brilliant, that had been developed with the hydrochinone developer. He preferred it above all others for this film. The negatives had a bluish black color, with strong contrasts, and were said to be quick printers.

The *President* — During the last week there was a meeting of representatives of the Photographic Society of Philadelphia, the Boston Camera Club, and this society, in regard to the exhibitions which take place once in every three years in each city. You all know about the arrangement. The rules have been changed to a slight extent, and everything promises to make the exhibition in Philadelphia, next spring, very interesting. I will also state that Mrs. Nathan Appleton has been elected an active member of the society since the last meeting.

In reply to President Canfield's request for a report from the Chemical Committee, Mr. J. H. Stebbins, Jr., its chairman, stated that the committee had a report in preparation, but was able to say informally that it had received and tested a new brand of hydrochinone and found it to be chemically pure. It was of the same manufacture that Mr. Beach said he had tried. The committee had also tested a preserving compound for preserving a sensitized silver paper, and ascertained one of the ingredients to be quicklime. It had tested some collodion emulsion dry plates coated five years ago with Mr. Newton's emulsion, but they were valueless. The entire film was reticulated.

On motion, the meeting then adjourned.

After the meeting was over Mr. Newcombe gave a very interesting demonstration upstairs with the Harvard slow gelatine chloride paper. He made the exposure with an inch or two of magnesium ribbon, and developed with oxalate and iron. The pictures were perfectly clear and free from fog.

The foregoing report has been revised and corrected by the Committee on Papers and Publications, the following active members composing it: J. H. Wainwright, F. C. Beach, C. W. Canfield.

The committee requests any members desiring to read papers before the society that they notify the committee in advance, and furnish the title of the paper and an abstract of the subject it relates to.

Descriptions of apparatus presented for exhibition should be intelligently written out and given to the committee at the meeting at which they are shown.

AMERICAN INSTITUTE—PHOTOGRAPHIC SECTION.

Informal Meeting, November 21, 1888.

The *Vice-President*, J. B. Gardner, called the meeting to order, and said:

Gentlemen and Fellow Members: The subject chosen for this evening is "Lighting and Posing." As introductory to this very practical subject, allow me to say that, so far as I am capable of judging, there has been more attention paid to this branch of photography in the last ten years than in all its previous history.

It is true that a number of photographers might be named who exhibited in their work marked artistic skill more than thirty years ago, but they are exceptions to the general rule. For the most part, those engaged in this art-science during its early history were mostly occupied in exploring its chemical mysteries and in devising suitable mechanical appliances.

The irregularity and uncertainty of their chemical results, and the clumsy and cumbersome apparatus with which they were obliged to work, fully took up their time and attention, and they regarded themselves lucky when their failures did not exceed their successes, and they always regarded their work a success if accepted by their patrons, as these (patrons) were not always competent judges, the work turned out was often neither complimentary to the artist nor to his subject; and in nine cases out of ten the latter left the studio not altogether satisfied, and in no humor to magnify the intrinsic value of the art.

This shade of disappointment, however, had the effect of working for the general profit of the fraternity; for had the pictures been perfectly satisfactory, there would have been no temptation on the part of the subject to extend his patronage to every photographer within his reach before making his second call upon the first. In fact, many photographers never dreamed of seeing their patrons more than once, and, hence, treated them accordingly. This general dividing up of the profits of the business, however, led to greater dilligence on the part of the operator, and inspired him to labor not only for successful chemical results but for the most pleasing effects of light and shadow, and thus he was naturally led to the study of proper lighting and posing his subjects. To this end, better sky-lights were constructed, together with a general revolution of the paraphernalia of the operating room.

The fact that properly lighting and posing the subject added anything to the chemical results, or had aught to do with these results, was never considered by many of the early practitioners, and this is not to be wondered at, when we remember they were drawn from a variety of occupations, that required little or no training in the schools of either science or art. The common laborer, the mechanic and the scholar, equally regarded himself competent to learn and practice the art of making sun pictures. From this very common idea respecting the simplicity of the art, hundreds, widely different in their natural aptitudes, were induced to enter the photographic field. These differences, however, tended to the more rapid development of the art, for its requirements in order to success, embraced the muscle of the laborer, the ingenuity of the mechanic, the cultivated eye of the artist, and the skillful hand of the chemist. So in course of time, each of these became specialists in that branch of the art most congenial to his taste, or most hopeful as a means of support. The result of this classification has not only increased the value and dignity of the art, but multiplied its uses in a great variety of ways.

Now that this multiplicity of talent has been thus classified, and the chemistry and mechanical appliances brought under control, it only remains for the positionist to so study his special branch of the work that photography shall no longer be numbered among the mechanical arts.

The *Chairman* then introduced Mr. Alexander Becker, by saying that Mr. Becker was among the first who practiced the Daguerreotype art in this country, and during his entire business career was regarded by the members of his craft as head and shoulders above the majority of those engaged in the profession.

Mr. BECKER responded by saying:

Mr. Chairman and Gentlemen: This is a subject that has given me no little thought and anxiety. I have spent many, *many* hours in the effort to produce the most pleasing pictures and at the same time truthful likenesses; but am sorry to say I have often failed in one or both of these results. I am convinced that it requires no little time to become an expert positionist, and I know of no way of learning this branch of the art but by long continued practice. In this way the eye becomes sensitive to faults, and the hand skillful in removing them. It is true we may learn something from the work of others, but if we would be masters in our art, we must rise above a slavish imitation. I remember the work of the prominent Daguerreotypists during the early history of the art, and so individualized was it that its maker could be easily recognized. You would never mistake Brady's pictures for Gurney's, though both might be equally pleasing to their patrons. Nor would you mistake the portraits of the Messrs. Lewis & Holt for those of Messrs. Anthony, Clark & Co.; nor Thompson's for those of Bogardus; nor Gardner's for those of Burgess; and so on with a number of others that I might name.

I can only say, gentlemen, if you would learn "Lighting and Posing," it must be mainly by practice; and whether you have art culture or not, practice only will lead to success.

Thinking it might be of interest to the section, I brought with me some examples of pictures made during the infancy of the art. The oldest of these pictures is now forty-six years of age, and so far as I can perceive they have all retained the vigor of their youth and beauty. As I happen to be their father, I trust you will pardon me for calling them my pets.

The examples were now examined and highly eulogized by the members of the section, Mr. Baker at the same time answering a volley of questions as to the methods used in their production and the persons and places of whom they were the counterfeit.

He also said: "One of my favorite modes of practice under the light was to use a plaster bust of some prominent character, drape it with velvet or some colored material that would make striking contrasts, and then light it in such a way as to secure the most harmonious and pleasing results. To do this was no easy task, for often, when I secured the face, I lost the beauty of the drapery; or in bringing out the draping, ruined the face. I, however, finally solved this problem, and thus gained a mastery over my light that was ever after one of the secrets of my success.

The Daguerreotype portraits were regarded by all present as past criticism, both for lighting and posing, and for excellence in chemical results.

Some of the earliest paper pictures were also shown, and by these it was readily perceived the direction in which the art has made the most rapid strides. Mr. Becker was followed by

Mr. H. J. NEWTON, who, after making some preliminary remarks concerning the art culture of photographers, said:

Mr. Chairman and Gentlemen: I brought with me for your friendly criticism some examples of portraits to illustrate how the same face and figure may be modified or entirely changed by different lighting and posing.

Here are a number of proofs from the same subject, and yet I think you will find them so widely different that you could hardly imagine them taken from the same figure.

While these pictures were being examined, Mr. Newton spoke of the modification of light essential when using dry-plate negatives.

These plates, he said, produced the best results with a subdued light, and with very delicate lights and shadows on the subject.

The strong illumination required to make a good picture by the wet-plate process, would most likely spoil it if made with a dry plate; and because many pictures had been thus spoiled, some photographers had been led to believe that it was the fault of the plate rather than their improper lighting of the subject.

These remarks he illustrated with a number of photographic examples, which called forth the hearty approval of all.

The chairman now introduced Mr. Thomas Faris, who he said could no doubt give some practical points on "Lighting and Posing," as he had had perhaps the most extensive practice in picture making of any photographer in the country.

Mr. FARIS responded by saying, "I have been making pictures for nearly half a century, and during this time have taken an active part in the multitudinous changes through which the art has passed. What Mr. Newton has said respecting the different lighting required for wet and dry plates is equally true with ambrotypes and negatives, and what our chairman has said in his introductory remarks concerning the light producing unsatisfactory results is also true. The trouble has been with many photographers that they have attempted to remedy the difficulty by changing or modifying their chemicals, and in this way have often gone from bad to worse in thus mistaking the real cause of their trouble.

This mistake, however, is not likely to occur to one who has made lighting and posing a special study, for his eye has become familiar with all the chemical effects produced by different intensities of light.

As Mr. Becker has said, the most effective way of learning posing and lighting is by practice. It is also to be remembered, that we will be obliged to commence our studies anew whenever we change our studios and skylights, unless perchance they happen to be of the same size and construction as the one in which we have been in the habit of working. I believe much may be learned by the careful study of the works of art and by such excellent photographic examples as have been brought to our notice this evening; and especially, by thus meeting together and talking over the subject in a friendly and informal way.

No doubt there is a great natural difference in positionists—some appear to be admirably fitted for their work—and it is from this class we often learn the least, for their methods are too subtle to be readily seized upon, and their superior ability they regard as trade secrets and on which they rely to ensure the most permanent and lucrative positions. The positionist must learn at a glance what view of the face will secure the best results with the subject in hand, and as no two subjects will be found precisely alike, so he will be obliged to vary both the lighting and position of each. The skillful workman in this branch readily perceives whether the right or left side of the face should be made the most prominent; for few faces are equally good on either side. Hence careful observation and experience, together with a natural aptitude for the work, were essential in making the accomplished positionist.

Mr. GEORGE W. KITTREDGE said he believed many photographers were more anxious to make handsome pictures than truthful likenesses, and to illustrate this he exhibited two pictures of the same person made by different artists. One of these pictures was made for the purpose of obtaining a faithful likeness, the other with the intent of so flattering the subject as to insure its approval—one was made with a sidelight, the other under the skylight—one was a picture, the other was a likeness. Observing the marked difference in these examples, he said, I have been forcibly impressed with the conviction that a sidelight is sometimes to be preferred. Now that we have plates extremely sensitive the powerful effects of the skylight are no longer essential to produce the needful chemical results, and hence we may pose our subjects in a light in which they are commonly seen, and not in one familiar only to professional photographers. While, however, the great struggle is to gratify popular taste, rather than that of the artist, while pictures are more in demand than portraits, any radical change in the present mode of lighting is not to be expected.

Mr. Kittridge was followed by

Mr. E. T. KELLEY, who said: *Mr. Chairman and Gentlemen:* I shall be obliged to take some exceptions to the previous speaker in respect to people preferring pictures to portraits. In my practice for the last thirty years or more, I have found my patrons more anxious to obtain a true likeness than a handsome picture; though they never objected to the handsome so long as the other condition was complied with. I have, therefore, always labored to combine these qualities as far as possible without sacrificing the likeness, and to this end have but slightly retouched my negatives. In my judgment the retouching is carried too far, and in this way many good likenesses are spoiled. I believe what has already been said, that posing and lighting must be mainly learned from long continued practice, and even this may be of little use to one who has no love nor natural aptitude for the work.

Mr. O. G. MASON exhibited some very interesting proofs used by physicians in their hospital studies. These examples gave evidence of careful lighting, and appeared to be admirably suited for their intended purpose. They attracted no small share of the attention bestowed upon the several exhibits that preceded them, and gave ample proof of the value of photography in the schools of medicine.

The *Chairman* stated that he had received from some of our leading positionists and artists letters of regret that prior engagements would prevent their being present; but hoped that on some future occasion the subject would be again taken up, when they might share in the interchange of thought on this very interesting and practical question.

The usual time for closing having now arrived, the Chairman declared the section adjourned, and bid one and all a kind "good night."

COLUMBUS CAMERA CLUB.

THE regular monthly meeting for November, of the Columbus Camera Club, was called to order at 8 P.M., Monday, November 19th, with *President* LINCOLN in the chair, fourteen members and four visitors present.

The evening's entertainment consisted of comparative tests of "Flash-Light" compounds. Six Carbutt Eclipse plates were exposed on groups of the club members ; one of these plates was developed with hydroquinone, and the result was principally green fog. The other five were developed with pyro and soda, yielding good results. The best negatives were those which had been exposed under the light of magnesium powder, without other ingredients.

Mr. W. H. MILLER demonstrated the working of the apparatus for igniting the magnesium. It consisted of a spirit lamp, with a half-inch metallic tube passing through the middle of the burner and coming out of the side of the lamp, forming a right angle; one end of the tube was connected with rubber piping, to which was attached a rubber bulb; the other end opened into the flame of the lamp. Eight grains of magnesium powder was poured into the metallic tube, and by pressure of the bulb the magnesium was thrown into the flame, burning with a very brilliant light and little or no smoke compared with the compound magnesium light.

Hydroquinone as a developer for short exposures has not been a success with the members of this club, but a majority of them prefer it for the development of time exposures and bromide paper. Several members of the club have given the new flexible films a trial, and are very much pleased with them. Hereafter the regular meetings of The Columbus Camera Club will be held on the third Thursday of the month instead of the third Monday, as heretofore. F. H. HOWE,

Secretary.

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ROCHESTER ACADEMY OF SCIENCE—PHOTOGRAPHIC SECTION.

ON November 20th the Academy of Science Hall was filled to an uncomfortable degree by the members and friends of the photographic section to witness the lantern exhibition of slides made by the members of the section, in charge of *President* CROUGHTON.

The exhibition showed excellent work and was greatly enjoyed by all present. Among the members exhibiting were *President* CROUGHTON, H. W. MATHEWS, E. W. HORN, JAMES STREETER, J. F. HOVEY, C. F. HOVEY, H. H. SPENCER, S. H. LOWE, W. B. PICKARD, C. KERRIGAN, R. H. GILBERT and E. E. BAUSCH. Also a very fine series of slides by Mr. JOHN BARTLETT, of Philadelphia, which were greatly admired.

At the next meeting President Croughton will read a paper on "Flash-Light Photography." JAMES STREETER,

Secretary.

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TORONTO AMATEUR PHOTOGRAPHIC ASSOCIATION.

THE formal opening of the Association Rooms was held on Friday evening, November 9th. The *President*, Mr. G. S. C. BETHUNE, occupied the chair.

Dr. ELLIS presented the report of the committee appointed to find suitable accommodation, as follows : "In accordance with the instructions received they spent some weeks in visiting various rooms throughout the city, comparing their respective advantages and ascertaining their comparative cost. After several meetings of the committee it was finally decided to take a room in the fine building in course of erection belonging to the College of Physicians and Surgeons on Bay street, as soon as the building was complete and the room secured by the association ready for occupation. Your committee gave out contracts for the putting up of the dark room, with all modern appliances, and have now to report the completion of the same in a very satisfactory manner, and trust that the members will find the dark room to answer every purpose.

They also beg to report that they have furnished the room as the members see it, endeavoring to make the room as home-like as possible, without putting the association to any unnecessary expense.

The committee trust that now that everything is complete and in working order, the members will take every opportunity of using the rooms and increasing the usefulness of the association.

Six new names were proposed for membership and elected.

The proceedings of the evening were brought to a close by Messrs. J. G. Ramsey and Hugh Neilson giving a very interesting exhibition of lantern slides made by them from their own negatives.

The regular monthly meeting of the association takes place on the first Monday in each month. F. D. MANCHEE,

Secretary.

BROOKLYN ACADEMY OF SCIENCE—PHOTOGRAPHIC SECTION.

A REGULAR meeting of this section was held Wednesday evening, November 28th, at their rooms, Warner Institute, Broadway and Willoughby avenue.

The subject for the evening was, "How to Reduce and Intensify Negatives." There was a number of formulas given, after which a number of questions were asked and answered by the lecturer.

The subject for next week is, "How to Sensitize Albumen Paper."

These lectures are all illustrated by experiments.

This section meets every Wednesday evening, and all interested in photography are invited.

We would also be pleased to correspond with other photographic societies or others upon any questions in photography.

JOSEPH LOEBER, *Secretary*,
230 Lee Avenue, Brooklyn.

[*From the Photographic News.*]

HOW TO MAKE LANTERN SLIDES ON GELATINO-BROMIDE AND GELATINO-CHLORIDE PLATES.

(*Continued.*)

IN photographing buildings, and perhaps churches especially, it will often be found that the height of the object is so great that only part of it appears on the screen. In such a case, do not tilt the camera, or the resulting picture will be so distorted as to appear tumbling over; but raise the lens sufficiently high by means of the rising-front. This proceeding will probably bring all of the object on the ground glass; but if it does not the camera must be tilted back, and the swing-back be brought into requisition, when the object must again be focussed. Use a large stop, or on very dull days the full aperture of the lens, for focussing, and then insert the largest stop that will give a correct focus. When the swing-back has to be used, the smallest stop must be inserted, or parts of the picture will be blurred and indistinct. In photographing buildings, generally speaking, a small stop will give the best result for lantern pictures, as the sharper the picture the better, for in this case a microscopic sharpness will not appear unnatural.

Now as to swing-backs; if the picture can be included on the focussing screen by aid of the rising-front, it is better to let the swing-back alone; for its use is attended with difficulty, and requires much judgment. Therefore, if the rising-front of the camera has not sufficient range to place the lens at the very top of the camera, replace it by one that has—a rising-front can easily be manufactured at home from a piece of cigar box, by any one possessing a minimum of mechanical ingenuity; for the most exact and pleasing pictures of architectural subjects, whether interior or exteriors, are those obtained where the camera has been placed perfectly level. In a small silver print slight distortion will often be unnoticed, but in a lantern slide every imperfection, being highly magnified when exhibited on the screen, shows out in a most unpleasant manner.

In photographing landscapes, pure and simple, more license is allowable in the position of the camera. In a landscape a slight departure from absolute truth is not noticeable; thus, the camera may be tilted a little backward or forward, in the majority of cases, with impunity. In this work the use of the smallest stop is not advisable, generally speaking. The largest that will give a correct focus will make the most natural picture. The distance should not appear in the picture as if seen through a telescope; but everything should appear as visible to the eye; objects close at hand sharp and distinct, and those further off gradually decreasing in distinctness to the extreme distance. Never use a very short focus lens for photographing pictures which include a distant view. The writer has seen an otherwise excellent view of Dove Dale, which was utterly spoiled by the use of a wide-angle lens, the small hills in the foreground unduly magnified, while the mountains in the distance were dwindled into insignificance. Such a picture, if used for a lantern slide, would have appeared absurd and unnatural even in a greater degree than as a silver print. Wide-angle lenses are only useful in confined situations, and where lenses of longer focus cannot be employed.

Concerning exposures, little more need be said than that a long exposure will usually give the best results. The shadows must be full of detail, to render the picture fit for a lantern slide, and in developing the negative care must be taken to push the development until all possible detail in the shadows has been obtained.

Development of negatives intended for making lantern slides should be slow. Let the developer be weak at starting, and gradually bring it up to the necessary strength. As a rule, evenly dense negatives make the best lantern slides for printing by contact, but they must be free from all stain.

(*To be Continued.*)

SAID SMITH—There are dogs that have more sense than their masters. Just so, responded young Jones, I have got that kind of a dog myself.

MISTRESS—Did you tell those ladies I was out, Bridget?

Bridget—Yis, mum.

Mistress—Did they say anything?

Bridget—Yis; wan sed to the other, "I didn't s'pose we wud foind her in; she's on the strates most av the toime."

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this. No attention will be paid to anonymous communications.*

Q.—J. W. M. writes: Please give through the BULLETIN the best formula for bath for floating Extra Brilliant N. P. A. Pense albumen paper.

A.—The bath recommended by the makers of the paper is made as follows:

SILVER BATH.

Nitrate silver.........	1 ounce.
Water...............	10 ounces.

This bath must not react acid; filter before using, and stir after sensitizing each sheet. Float the paper from two to three minutes.

TONING BATH.

Solution No. 1.

Double fused acetate of soda..	90 grains.
Crystalized acetate of soda...	90 "
Pulverized borax............	48 "
Water......................	24 ounces.

Solution No. 2.

Chloride of gold and sodium..	12 grains.
Water	1½ ounces.

Mix the solution about one hour before using, and filter.

FIXING BATH.

Hypo-sulphite of soda........	1 ounce.
Water......................	10 ounces.

All the baths must have a uniform temperature. The sensitized sheets and washed prints must not be dried too quickly. The prints should be moist when mounted.

Q.—"A Reader" writes: Please give me, through the columns of the BULLETIN, a formula of good smooth flour or starch paste that will keep.

A.—Mix the flour or starch into a thin cream with cold water, rubbing smooth and straining through coarse muslin. Then pour the cream slowly into about eight or ten times its volume of boiling water on a fire, and stir rapidly. When cool add ten grains of salicylic acid to every half pint, and stir thoroughly.

Q.—A. L. C. writes: Please tell me in the BULLETIN where I can obtain further information concerning the "Gassner Dry Battery," described on page 626 of the last issue.

A.—We do not know who makes this battery. Write Mr. F. C. Beach, 361 Broadway, New York.

Q.—T. H. S. writes: Please answer through the BULLETIN the best formula for printing on fabric, such as cotton, linen and silk. If it has been published through your columns previously would like a copy of same.

A.—See "Silver Sunbeam," page 469, issued by our publishers. Method is too long to reprint in these columns.

Q.—L. N. S. writes: Will you please state through the columns of the BULLETIN which formula is the best for silvering "N. P. A. Extra Brilliant Albumn Paper?"

A.—See answer to J. W. M. above.

Q.—W. H. O. writes: Would you kindly through your BULLETIN tell me of something that can be used to spot photographs with before burnishing; something that will not come off or run when burnishing. I have used patent spotting materials, but they seem to run and come off worse than India ink does. I am using Entrekin's Eureka Burnisher. If you can let me know of something that will answer my purpose you will oblige me very much indeed.

A.—See answer to A. W. B., BULLETIN of April 14, 1888, page 223.

Q.—W. S. W. writes: Will you please give me the best formula for developing an under-exposed plate, in order to bring out good detail, and retain its density through the hypo bath.

A.—Take the formula given by the maker of your plates, and use it first diluted with its own volume of water, until the outlines of the picture are well out, now rinse and put into a new bath of the same developer, using a little more alkali than given by the plate-maker.

Leave in this bath twenty or thirty minutes, well covered from light of any kind, and you will get out of the negative all detail that it is capable of giving.

Q.—Ella McT. writes: Will you please instruct me through the columns of the BULLETIN how to prepare satin for printing.

A.—We cannot give details here; but must refer you to answer to W. H. O., given above.

Q.—C. H. K. writes: I send you two prints. Will you tell me through the BULLETIN the cause of the vignette having the yellow halo around the edge and the cure of same. The longer they tone the worse they get. Would you say that the print of the old man was measly. I would like to have somebody write a paper on measles, mealyness and miserable printing. I mean the way out. Which is best, moderately strong toning and fixing baths, or weak ones.

A.—The halo around the vignette is probably due to some impurity in your gold solution. A trace of hypo in the toning bath would give such an appearance; also, copper as an impurity in the gold chloride. The print of old man is a little mealy or "measly," as it is called. It is probably caused by not having toning and fixing baths both at the same temperature, one being too cold, probably the hypo. For good toning and fixing baths, see answer to first friend, in these columns (J. W. M.). From this, you can judge where your baths stand.

Q.—E. M. M. writes: Have you any formula for toning albumen prints where uranium nitrate is used? Or, isn't it used at all for albumen prints? If you know of any, please publish in next BULLETIN, and oblige.

A.—We have not seen a formula for toning albumen prints with uranium, but think the process of T. C. Roche, published in the BULLETIN, page 322, June 11, 1887, could be used for that purpose if slightly modified.

Views Caught with the Drop Shutter.

MR. H. N. GREINER, of McLoughlin Bros., has made some very fine wet plate negatives reversed of line work made on the new Flexible Films. This shows that the new films are adapting themselves to all the exigencies of photographic work.

C. D. KIRKLAND, of Cheyenne, Wyo., sends us a handsome album of some of his achievements in instantaneous photography. Race horses, trotters, steeplechasers, bucking mustangs, are all finely caught, and speak well for his photographic skill.

SCHUMANN'S SOUTHERN PHOTOGRAPHIC BULLETIN again comes to our table, and contains a mixture of useful notes and a price list of photographic articles supplied by this well known Southern merchant, at Atlanta, Ga.

MISS CARO DWIGHT has opened a studio at 3 East 14th street, New York City, where classes are being formed for instruction in photography.

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EVENING POST JOB PRINT, N. Y.

EDWARD ANTHONY.

ANTHONY'S

Photographic Bulletin.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

DECEMBER 22, 1888. Vol. XIX.—No. 24.

IN MEMORIAM.

Edward Anthony.

The voice is still in him who has been with us so long; the smile that greeted us is now only a memory; and the welcome given when last we met remains a delightful dream; beautiful but lasting impressions of one of the most genial gentlemen that it has been our fortune to meet in life.

Edward Anthony left life's labors near the hour of noon on Friday, December 14th, at the ripe age of seventy years. He left his office feeling somewhat ill on Friday, December 7th. On the following morning his physician was called in, but did not consider his symptoms particularly alarming. On Monday night, however, he was attacked by heart failure, accompanied by shortness of breath, which completely wore him out through loss of sleep, till at 11.45 on Friday morning, he passed peacefully away, conscious to the last. His mind was never clearer. Few men in America have had such a successful and at the same time industrious career.

He was born in New York in the year 1819, of good old Knickerbocker family. He received a liberal education and graduated from Columbia College in the year 1838, from a class of twenty, many of whose members have now passed away.

After leaving the college he took up the profession of civil engineering, and was one of the first of those who helped to survey the route for the Croton Aqueduct. About this time Professor James Renwick undertook the Government survey of the northeastern boundary of the United States, then in dispute with Great Britain, and Edward Anthony was asked to accompany him. During his work on the aqueduct Mr. Anthony had experimented as an amateur upon the new method of taking pictures invented by Daguerre, and was particularly successful with it. Professor Renwick concluded that this knowledge of the daguerreotype might be put to good use on the survey, as England had denied the existence of any "high lands" along the line, as had been claimed by the United States. The barometer and spirit level might be disputed, but the sun pictures of Edward Anthony were incontrovertible, and thus our beautiful art was made for the first time practically useful to the United States Government. The views obtained are preserved in the National archives.

At the completion of the survey Mr. Anthony took up photography as a profession, and did his first practical work in the City of Washington, making daguerreotype photographs of members of Congress. In this he was particularly successful, and acquired that knowledge of photographic manipulation that served him so well in his future business career. Very soon after this time he gave up the profession of photography and laid the foundation of what has become the largest photographic importing and manufacturing house in the world. Beginning with a little store on Broadway, in six years Edward Anthony was ranked among the first mercantile and manufacturing men of New York. In the year 1852, Henry T. Anthony, his talented brother, entered into partnership with him, and took charge of the manufacturing department of the business, which had now become more than one brain, even Edward Anthony's, could well manage. Two men were never better matched to work together than the Brothers Anthony, and as they grew together in the new association they became more and more united in the strong brotherly love that characterized both, until they were severed by the cruel hand of Death, which snatched the beloved Henry from Edward's side in October, 1884.

In 1870 the first BULLETIN was started as a means of spreading abroad useful photographic information, and has continued until now. It is interesting to note the inscription upon the covers of the earlier journals, it runs as follows :

"The cheapest stores are the solid concerns that have a reputation to lose, that depend upon a broad and steady flow of custom, and that never deal in flummery and falsehood."

Starting with such a motto and following it without deviation, it is not surprising that the house of E. & H. T. Anthony & Co. is known in every civilized country on the face of the earth, and that their mail keeps a corps of correspondents busy in a number of languages. W. H. Badeau and Colonel V. M. Wilcox, after being in the firm a number of years, ultimately became partners, and continued until the year 1870, when W. H. Badeau withdrew and Colonel Wilcox continued with the Brothers Anthony.

In 1877 the business became so large that it was made a corporation, with Edward Anthony as President ; H. T. Anthony, Vice-President ; and Colonel V. M. Wilcox, Secretary, who were the sole owners of the business. On the death of Mr. H. T. Anthony, Colonel Wilcox became Vice-President, and Mr. Richard A. Anthony, son of Mr. Edward Anthony, was elected Secretary, which has continued until the present time.

The member of the company who has just left us, was remarkable for his quiet and genial demeanor ; while his clear and business-like decisions were admired by all who knew him.

Edward Anthony leaves behind him a host of sorrowing friends. Those who knew him best loved him most ; and many eyes are dim where sturdy hearts are beating. Many a laborer in the varying vicissitudes of professional photography feels that a true friend has left him.

Those whose heads are grey with years, together with the younger members of the profession, who had the good fortune to meet him, feel that his departure from amongst us is a personal loss. And each and all can say :

"Green be the turf above thee,
Friend of my better days ;
None knew thee but to love thee,
None named thee, but to praise."

Our publishers desire us to make the following announcement in regard to the death of Mr. Edward Anthony.

"Throughout his life the commendation of his own conscience and that of his Maker was sought rather than that of mankind, and though nothing could be more gratifying to his family and associates than the scores of eulogistic and sympathizing letters that his friends have showered upon us, yet we know from his dislike of ostentation that his wish would be to keep them out of print. Out of deference to that wish we therefore refrain from publishing them, and take this opportunity of thanking through these columns the many friends who have so thoughtfully remembered us in our affliction, and whom it would be manifestly impossible to reply to individually." E. & H. T. ANTHONY & CO.

The following report of the meeting of the manufacturers of Philadelphia speaks for itself:

PHILADELPHIA, December 15, 1888.

At a meeting of the dealers in and manufacturers of photographic supplies, in the City of Philadelphia, called this day at the office of Wilson-Hood-Cheyney & Co., Limited, to take action with reference to the death of Edward Anthony, of New York, there were present Messrs. Maris, Cope, Haworth, Wilson, Buchanan, Cheyney, Carbutt, Phillips, Kennington and Bayle. Mr. J. Haworth was called to the chair and Mr. J. P. Cheyney was requested to act as Secretary. The Chair having read telegrams announcing the death on the 14th inst. of Edward Anthony, the following preamble and resolutions were adopted:

Whereas, The sad intelligence has reached us of the death of Edward Anthony, the founder and up to the day of his death the head of the house of E. & H. T. Anthony & Co., of New York.

Resolved, That we extend to the associates of the late Edward Anthony our cordial sympathy in the taking away of the honored head of their house, which has been so long noted throughout the country for its enterprise, integrity, and liberal dealing. The well earned reputation of the Brothers Anthony is a priceless legacy to those upon whom devolves the management of the business established by their energy, diligence and skill.

Resolved, That a copy of the foregoing be signed by those present at this meeting and sent to E. & H. T. Anthony & Co.

JOHN HAWORTH.
A. M. COLLINS MFG. CO.,
Edward Cope, *Vice-President*.
THOS. H. MCCOLLIN & CO.
J. F. MAGEE & CO.
MARTIN WM. H. NIXON PAPER CO.,
Samuel Bayle, *Treasurer*.

WILSON-HOOD-CHEYNEY CO., LIMITED,
Wm. D. H. Wilson, *Treasurer*.
BUCHANAN, BROMLEY & CO.
THE BLAIR CAMERA CO., Phila.,
E. R. Kennington, *Manager*.
JOHN CARBUTT.

EDITORIAL NOTES.

OWING to the death of Mr. Edward Anthony the BULLETIN has been delayed for this issue, and we feel sure our subscribers will pardon the delay under the circumstances.

AT the funeral services of the late Mr. Anthony we noted many veterans in our art, and numerous gentlemen prominent either in a business or professional way with photography, many of them coming from distant cities to pay their tributes of respect to one who had labored with them for nearly half a century.

ANOTHER noteworthy feature in the attendance at the funeral services was the number of old (not in years, but in length of service) employees of the house of our publishers. Very few houses of business in this city of changes could present such an array of long-tried retainers, representing in some cases men now in their prime who have grown up with the house. Two of these have served thirty-five years; four between twenty-five and thirty years; five between twenty and twenty-five years; four sixteen to twenty years; and a number of others varying from seven to ten years.

THE Informal Exhibition of Photographs at the Society of Amateur Photographers of New York has closed after being open two weeks. It was one of the most successful in the annals of the society, and showed a large amount of progress on the part of its members. We regret that our crowded columns will not allow us to give a more detailed notice of the pictures at the present time.

THE Joint Exhibition Committee that has charge of the Philadelphia Exhibition of the United Societies of Boston, Philadelphia and New York, met on November 10th last, and made arrangements for the exhibition in the Quaker City next spring. Circulars, rules, etc., will be published at an early date.

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LETTER FROM GERMANY.

BY DR. H. W. VOGEL.

The Latest about Hydroquinone.—How to Use Ordinary Salt for Washing Prints and Plates.—About the Reduction of Photographic Hypo Solutions and other Silver Wastes.

THE war-whoop of the day is hydroquinone, and all indications seem to show that this material as a developer will force away oxalate and pyro, slowly perhaps, but surely. If this did not take place already at an earlier date, it is owing to the formula. The correct proportion had not yet been discovered. The formula which I recommended to you before, with carbonate of sodium, gives excellent results, but works slower than the oxalate and pyro developers, and contains besides a good deal of hydroquinone, which puts it somewhat higher in price, than the last mentioned developers. In prints on bromide of silver gelatine paper the white parts of the same will color slightly yellow at long developments, and the whole picture receives a peculiarly greenish tone, particularly at moderate over-exposure.

Herr Baltin has now published a developer with carbonate of potassium, which does not possess the above-mentioned defects. The development proceeds very rapidly, and the price of the developer is very moderate, on account of the greatly reduced quantity of hydroquinone; whereas it has the great inconvenience, that in consequence of the application of carbonate of potassium, some of the plates, particularly in hot weather, will frill slightly or have bubbles. Lately my son tried to replace in Baltin's formula the carbonate of potassium with carbonate of sodium, and with very good success. The development proceeds likewise very quickly and without any frilling. The developer can also be used repeatedly, and notwithstanding, shows only a slight brownish discoloration. Bromide of silver gelatine pictures receive an agreeable black or brownish black tone, and the whites remain completely pure.

My son uses the following formula :

Sulphite of soda (not decomposed)	40 grams.
Hydroquinone	5 “
Cryst. carbonate of soda	75 “
Water	900 c.c.

With the same developer—adding only a little fresh developer from time to time, I have developed successively thirty diapositives, without any strong brownish coloration of the developer.

Dr. Bannow, the chief chemist of the celebrated firm of C. A. F. Kahlbaum, in Berlin, has lately spoken about the pretended difficulties, which prevented many photographers from the application of hydroquinone. It has been asserted quite often, for instance, that the solution would not keep at all, and in one case it had colored already during filtering. Although I had not the slightest doubt about the durability of the solution, keeping the same from six to eight weeks without coloration or loss of developing strength, I considered it desirable to prove its constancy experimentally.

For this purpose I produced on October 10th, of this year, a solution and at once titrated it.

The result was :

Hydroquinone	1.78 per cent.
Sulphite of soda	7.26 “

Of this solution one-half, A, was kept in a bottle only half full in a dark room, the other half, B, was kept in diffused daylight. Renewed titration on the 29th of October, almost three weeks later, resulted in :

SOLUTION A.

Hydroquinone	1.78 per cent.
Sulphite of soda	7.00 “

SOLUTION B.

Hydroquinone	1.87 per cent.
Sulphite of soda	6.70 “

Even with careless covering the hydroquinone had not been reduced at all, the sulphite in the dark only $\frac{1}{4}$ and in the light only $\frac{1}{2}$ per cent. This trial demonstrates, therefore, quite distinctly, that the sulphite is always the cause of a spoiled developer, and that the light has some influence. Some sulphite of soda is found, which hardly contains any sulphurous acid; but even the best article found in market, which contains from 90 to 95 per cent., will gradually spoil, the sulphite passing into sulphite of soda (Glauber's salt) by taking up oxygen, and this takes place particularly if the salt loses its crystalline water by decomposition. It is also to be recommended to keep the same in well corked glass bottles and not in paper.

Taking these properties of the sulphite of soda into consideration, the hydroquinone developer made with the same, without soda or potassium, can be kept several months, but with soda at least several weeks.

A further quite frequent complaint concerns the long duration of development. True enough, quickly working solutions have been recommended repeatedly, but with the first formula, which has my preference, because it seems to give us the most certain results, it can also be worked pretty rapidly. Care has only to be taken that the temperature of the solution is not below 20 degrees *C* (68 degrees *F*). If this is looked after, the development will always be finished in two or three minutes; at 15 degrees *C.* seven to eight minutes are required.

Dr. Bannow, at a meeting of the amateur society lately, also made some remarks about the washing of prints and plates.

He says: "I have the pleasure to report about a few tests made in regard to washing out of hypo from gelatine plates. The most sensitive means, to prove every trace of fixing soda, is the nitrate of silver. To prove this, a little of the water used for washing is heated with a few drops of silver solution; if it contained only $\frac{1}{10000}$ of fixing soda, a black precipitate will appear, which with weaker proportions becomes brown. Even at $\frac{1}{500000}$ a distinct yellow coloration will take place, particularly when ammonia is added after heating. If we continue the washing with this reaction, we will find the following: If a freshly fixed plate (say 9 x 12 cm.) is placed in a tray with 100 *c. c.* distilled water, and this is replaced by the same quantity of fresh water every ten minutes, it is only after the eighth or ninth water that no more coloration of the silver solution will take place. But if the same quantity of a 10 per cent. chloride of sodium solution is applied instead of the first water, fixing soda can hardly be proven by the silver in the second water, and in the third bath has been completely removed.

The washing can therefore be completed with security in half the time, by the chloride of sodium, which, however, was already recommended years ago, and in cases where quick washing comes into account, it is the most simple means to be recommended.

According to the foregoing, the success of the hydroquinone developer cannot be denied. It is different with another developer, lately recommended. This is hydroxylamine. The same has now, after many fruitless tests as a developer, excited attention as an expedient in the working of photographic silver residues. Mr. Lainer, in Vienna, has made some interesting experiments with the same.

Very small quantities of the chloride of hydroxylamine exercise in the presence of an alkali a considerable reducing effect upon silver and gold compounds, so that the cost price, by application of the new reduction methods, can be designated as very low, so much more, as the price of the salt has also been greatly reduced lately, and the Aniline and Soda Factory in Baden produces a reducing salt, containing hydroxylamine, of which the kilo is furnished at two marks.

This reducing salt has according to a communication from the manufacturer, a reducing action of about 170 grams hydroxylamine chloride per kilo. Lainer gives the following example from practical workings: (*a*) From nitrate of silver (old silver baths, etc.)—a solution of nitrate of silver mixed with chloride of hydroxylamine, gives a white precipitate; when caustic potash or caustic soda is added, a lively development of gases will at once take place, and the separated chloride of silver is at the same time decomposed. On heating the solution the free silver will lump together and can easily be liberated from the adhering caustic potash, chloride of potassium, etc., by decantation. The silver is now put upon a filter, washed with hot water, until the filtrate, after additions of nitrate of silver, remains clear, dried and burnt. The silver, appearing gray heretofore, decreases to a white mass. The silver reduced in this way can be collected and worked directly into nitrate of silver.

(*b*) From bromide and iodide of silver—bromide and iodide of silver are easily reduced by chloride of hydroxylamine and caustic potash when heated, and the separation of the silver is to be executed in the same manner as in *a*.

(*c*) From solutions of chloride, bromide and iodide of silver in the fixing soda ($N_2 S_2 O_3$).

The separation of the silver from the fixing solution was done so far with alkaline sulphides, as sulphide of silver, or by immersion of strips of pure copper, heating with potassio-ferrous oxalate, or caustic potash and grape sugar, etc.

In heating the solution with caustic soda and chloride of hydroxylamine, the separation of the silver takes place in a short time. The silver powder precipitates.

This reduction method is excellently suited to obtain metallic silver from such solution (fixing baths of the photographers, etc.), because the separated product can at once be worked again into nitrate of silver.

(*d*) Separation of the silver from solutions of potassio-cyanide of silver. If the solution of potassio-cyanide of silver is heated with a small piece of caustic potash and chloride of hydroxylamine, the first action will take place with violent development of gases, in consequence of which an overflow easily occurs. After this first action it is heated until it boils, and caustic potash and small quantities of chloride of hydroxylamine are gradually added. The caustic potash has to be present in excess.

If, at further heating, no separation of silver can be observed, and the liquid appears clear, the main quantity of the reduced silver is collected on a filter, and a drop of the filtrate is tested with sulphide of ammonium. If it becomes black or brown, the filtrate, under further addition of the solutions, has to be reduced to a small volume by evaporation; finally it is diluted, and the rest of the separated silver is filtered. The filtrate finally remains clear to the reaction with sulphide of ammonium.

The principal quantity of the silver, about 90 to 98 per cent., separates pretty easily from the solution of the potassio-cyanide of silver, while the rest is precipitated by heating and evaporation.

It may be mentioned here that this method of reduction of metallic silver from potassium cyanide, as applied to silvering, can be used technically very well.

These methods have, therefore, a technical value, although they are not patented.

Berlin, November, 1888.

ENGLISH NOTES.

[*By our Special Correspondent.*]

What a magnificent printing process the platinotype is? Invented by Willis, in 1873, and perfected by him at intervals since, its development in England has been greatly retarded by the fact that the company holding the patent has hitherto required all users to take out a license costing $1.25 per annum. In such cases it is not the actual amount of money that is the trouble, but the fact that it is a "direct tax." It is human nature to dislike direct taxes—our income tax to wit—and to prefer to pay even a larger sum when levied indirectly, or by a slightly increased charge for materials.

But the advent of the Pizzighelli Direct Platina Printing Paper has caused the Platinotype Company to abandon their licensing system, and I believe the result will be advantageous to everybody. The outfit necessary for printing from whole plates costs five dollars, and includes two calcium tubes (to keep the paper perfectly dry), an enamelled iron dish, a quarter-quire of the paper, a thermometer, three india rubber pads (to keep the paper dry while in the printing-frames), and half a pound of neutral potash oxalate. I consider this very cheap, as the sheets of paper are of large size, measuring 26 x 20 inches, which yields nine whole plate prints easily. Subsequent supplies of the sensitized paper can be obtained at $8.50 per quire. I need not go into the chemistry of the platinotype process, but it is well known that the yellow appearance of the prepared paper is due to its being coated with a mixture of platinum salt and ferric oxalate. Sunlight changes the ferric to ferrous oxalate, and the latter compound is able to reduce platinum, and cause it to be deposited as a black powder. But the ferric oxalate must be in a liquid state—must be dissolved before it can effect this change. By floating the exposed paper upon a hot solution of potash oxalate we bring about this solution, and the faint gray image in iron (which is all that can be seen when the paper is removed from the printing-frame), is instantly changed to beautiful tones of black and gray. Lastly the paper is washed in two dishes of acidulated water, and then rinsed for ten minutes in plain water, and it is finished.

My reasons for alluding to this process just now are threefold. In the first place I have now, in my own practice, discarded silver printing in favor of platinotype. With silver I knew that my results—beautiful to-day—would gradually degenerate, would yellow and fade; but the platinum picture will outlast the paper on which it is made, and it will be possible for my great-grandchildren to see my work ! Then I hear that the process is not widely practiced in America, and I always desire to spread the knowledge of a good thing. Lastly, I have been getting platinum prints from dense negatives on dull November days (and an English November !—O my Stately friends ye know it not, and be thankful therefor), at the rate of one every half-hour ; while a friend has shown me a silver print which he has had in a frame (and with a good negative too), for nearly a week, and it is not "half-done." Therefore I preach platinotype ; and don't you be happy till you get it !

"Long expected," the penny photographic weekly has come at last. Its title is "Photography; the Journal of the Amateur, the Profession, and the Trade." It is published by Iliffe & Son, Vicar Lane, Coventry ; and is edited by Mr. H. Sturmey, long known as the editor of the "Cyclist." It is a quarto of twelve pages, and bids fair to be a success, for the "modest brown" is a popular coin in this country.

Anthony's "International Annual" continues to be read with interest. I find something new in it every time I take it up. The only complaint I have heard about it is, that there is "too much for the money."

Sets of our old-established weekly, the *Photographic News*, are now about impossible to obtain. Some society or worker on your side may be glad to know that the librarian (Lyonel Clark, Esq.) of the Camera Club, 21 Bedford street, London, has a fine set of the thirty volumes (1858 to 1888) which the club is willing to dispose of for $60. By the way, the Camera Club has now under consideration the question of removing to palatial premises on the Thames Embankment, the rent of which will be $2,000 per annum. This step is practically forced on the club by the large accessions to its membership.

The growing popularity of photography is proved by the introduction into several recent novels of characters and scenes drawn from the black art. Julian

Hawthorn's "The Spectre of the Camera; or, the Professor's Sister," is a contribution from your side of the Atlantic which I have not yet read, but whose title promises well. Another new three-volume novel, "An Imperfect Gentleman," treats of an impoverished nobleman, Lord Badelsmere, who keeps a professional studio "on the sly," as a means of subsistence for his family. Still another novel of this season—I have forgotten the title, but will look it up if any of your readers want it—tells of the fortunes of two young ladies of good birth who are thrown on the world, and who make a living by setting up as professional photographers.

No doubt the introduction of gelatine dry-plates has much to answer for! The professionals all say that it has made photography "too easy;" and it is a fact that anybody can take a bad photograph. The consequence has been a great accession to the professional ranks, and the introduction of a new class of men who pose as "amateurs" (perhaps "shamateurs" would be a better name for them), but who never lose a chance of making money by the art. No good definition of what constitutes an "amateur" has yet been laid down in photography, but I would venture to suggest that "the man who accepts money for photographs of his own making" cannot be an amateur.

In view of the large number of photographic exhibitions now held with separate classes for amateurs and for professionals, the question assumes a practical importance.

Mr. Bellsmith, of the Eastman Company, is just now going the round of the English societies to exhibit the wares of his employers. He tells me that he considers the work of our professionals inferior, but that of our amateurs superior to what is done in the States.

The objection I find to the Eastman paper is that it is apt to give such *hard* or "black and white" results. The Kodak Camera, which is being much advertised here, is little more than a toy. My experience, which is now pretty considerable, with all kinds of "paper" and "films" for negative-making, is that there is nothing like glass. I don't say that I should not take a roll-holder and paper if I were going to travel in—say Iceland. But for ordinary every day work, in-doors or out-of-doors, "stick to glass" is the advice of— TALBOT ARCHER.

THE LIGHTING IN PHOTOGRAPHIC STUDIOS.

BY P. C. DUCHOCHOIS.

(*Continued.*)

VIII.

WE have shown in the beginning of these papers that the lighting of the background has a great importance to relieve the lights and shadows by their opposition. The brilliant and artistic effects which can be produced by this artifice most photographers fail to take advantage of, their aim being to obtain as clear and evenly lighted ground as possible to show the perfection of their photographic operations. The result is that the figure appears inlaid, pasted, so to speak, on the ground.

When treating this subject, we observed that the shadow should be cast on the background at an angle analogous to that of the light falling on the model, which of course is very like nature. However, a background shaded vertically is no less artistic and effective to impart variety, effect and stability to the picture. We could cite examples selected from the works of the great masters; we will only call the attention of photographers to the manner of relieving light and dark employed by a master in our art, Adam Soloman, by means of a circular-alcove-background of his invention, which we will describe in the following lines.

The diagonal lighting is not possible in the studio. The reason is obvious. To produce that effect the background should be painted, casting a dark shadow across on the upper corner near the side light, and graduating it to a middle tint in the center, thence to a dark in the opposite corner. Above, the middle tint should melt into a dark, to break the evenness of an uniform diagonal shading all over the ground.

An effective background for busts consists in painting dark clouds in the center and blending them by featherly clouds on a tinted ground, the whole forming a pear-shaped mass projecting to a certain distance around the model as a vignette.

The background usually employed is made by stretching on one side of a frame a woolen cloth of a medium tint made for that purpose*, and on the other side the same material, but of a darker shade, to be used according to the color of the dress of the sitter. The background should be encased in a frame work and revolve forward and backward on pivots, thus allowing to place the upper part in the light and the other in the shadow, or to produce the opposite effect of dark and light.

This background can also be placed obliquely, so that the part opposite to the lighted side of the sitter stands in the shade, while the other, being in the light, contrasts with the shaded side of the same.

Mr. Adam Saloman's circular-alcove-background, as it is termed, is peculiar and exceedingly well adapted to produce every effect of light and shade. It is not only a background, but also a posing and lighting apparatus by itself, which almost dispenses of the encumbrance and troublesome use of curtains, screens and other contrivances to regulate the light. Its construction and use is thus described :

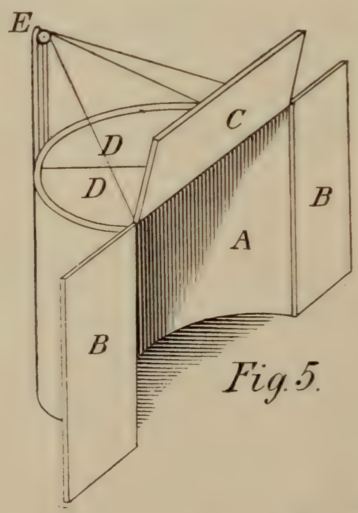

Fig. 5.

A is the semi-circular background, about 8 feet high, 10 wide and 5 deep from front to back.

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* This material is specially manufactured for E. & H. T. Anthony & Co.

B B are folding wings about 4 feet wide, hinged to the background.

C is a corresponding canopy, 10 feet long, 4 wide, hinged to the top.

Another canopy, *D D*, covers the background ; it is in two parts, hinged in the middle.

The post *E* carries a pulley at the top, over which pass cords connected with the different canopies, and fastened at the back so as to be easily raised or lowered.

The circular background *A* is covered with wall-paper of a salmon or chocolate color; it has three feet, not represented, with large casters.

All the other parts—wings, canopies—are light frames covered with transparent muslin, allowing a good deal of light to pass, but softening any direct rays of light. At the corners, between the wings and the canopy *C*, the muslin of the upper canopy is continued out, so as to fill up the corners; this is not represented in the figure.

The sitter is placed in the center of the curved part and just under the front canopy, by raising or lowering which any desired amount of soft and diffused top light is obtained, so, too, the side light is regulated by opening or closing the wings. The illumination is farther controlled or altered by turning the whole contrivance on its casters—the model remaining stationary—and thus exposing the open portion more directly to the light, or, on the other hand, turning away. The curvature of the background affords gradation, and its form and depth tend to give relief to the figure, and even this may be modified by advancing or receding the background from the light, or by raising or lowering the upper canopies, *D D*, by which the monotony and repetition of identical effects are avoided, and every grade of effects, from the lightest to the darkest, is easily avoided.

Whatever be the direction of the light which falls on the sitter, a just effect of dark and light will be produced on the background inversely to the lighting of the sitter, giving relief and brilliancy to the whole figure, and the side of the face the most lighted will be softened by the dark part of the background, whilst the shadow-side will be relieved by the most illuminated part.

The advantages of this system may be briefly summed up.

Effectiveness—as giving every variety of lighting.

Adaptability—it may either be placed in the ordinary lighted room or in a common room, as in the latter case it takes the place of blinds, curtains and other machinery.

Economy—that used by Mr. Adam Salomon cost him fifteen dollars only. To construct it, two curved pieces of wood for the top and bottom are connected by thin upright boards, tongued and grooved into each other, whilst the wings and canopies are formed of light framework, covered as described already.

The background is much in favor among photographers in Europe—in France especially—for posing and lighting. We are not aware that this or any other similar arrangements are employed in the studios of New York.

As to fancy backgrounds, interiors, landscapes, etc., there lie the greatest difficulties a photographer encounters ; for unless the background be appropriate to the subject, and the general color and lighting contrast with the color of the dress and lighting of the model, the effect is not good—often ridiculous.

On this subject (and on the accessories) we can give no advice. It should be left to the artistic taste and judgment of the photographer. It may be said, however, that the accessories should be real and the background not much elaborated; simple, and conceived after the manner of portrait painters, who, well knowing their importance, consider that part of the picture as difficult to treat as the portrait itself, in order to relieve it as is proper. Here there is a picture by Reynolds; on one side is a charming little miss, attired in light garments, sitting under the colored dark foliage of autumn, which relieves the admirable lighting of the child, and strongly contrasts with the landscape in the distance. The works of Reynolds abound in such excellent examples for the treatment of backgrounds.

We think that at present *fancy* backgrounds and accessories are much abused by photographers; the sitter is never represented *at home* "in an ordinary room among ordinary furniture."

IX.

The lighting of the model cannot be reduced to a system. There are, however, certain rules to be observed in a photographic studio.

In the first place, the sitter should not be placed to suit the camera, or point of view—which is a common fault with photographers—but posed to suit the light, and the camera moved to take the best picture of the composition.

Another error is to let the light play on all sides of the studio, in order to shorten the time of exposure, for only a certain quantity of light falls on the sitter and acts effectively, whilst the rest being diffused in the room and reflected upward by the floor, injures the *modelé,* or half lights, of the illuminated part, and flattens the shadows. Hence, all extraneous light, all which is not useful to light the model, should be excluded, as well as all reflections, but that which is purposely arranged to give effect.

This is important; moreover it permits to direct the eyes of the sitter to the obscured part of the studio, thus causing the pupils to expand and, avoiding to the sitter the painful sensation which results from looking to an object in a bright light, the expression being thereby seriously affected.

Where should the sitter be placed? You will certainly not turn the face directly towards the light; front light gives flatness to the features, imparts an insipid expression and produces a large reflection in the eyes, giving the appearance of blindness. This latter effect can be observed in many photographs, especially those lighted *a la* Rembrandt, so-called, though more or less marked or more or less attenuated by retouching, that great remedy for imperfect lighting.

If, in about the center of the studio, under the skylight, you regulate the top and side light by means of transparent colored curtains or screens to produce a soft, not too diffuse, illumination, and place the model under it, the light plays harmoniously around the sitter, the light being dissolved in the *ensemble*, and the shadows softened by the penumbra, the lighting being, however, sometimes too equal, without effect. But if, then, you project obliquely in front of the model a beam of direct light from above and from the side light in just proportions, the predominant parts will be more brightly lighted, stronger shadows cast on the receding ones, and a broad lighting produced which, contrasted by that of the background, will be quite effective.

In thus lighting the model the head screen or canopy is useful, whilst a reflector is seldom needed. If necessary, it should be of a light rose or blue color, placed at a certain distance from the model and a little to the side backward, in order not to be reflected by the eyes.

The principle of this mode of lighting is to illuminate the subject in a diffuse light with gradation to show well the *modelé,* to direct, then, a beam of light to give effect in the light by illuminating the predominant parts, and to project stronger shadows to obtain vigor and brilliancy. In proceeding thus, the light is pretty well under control.

Observe, that we recommend the use of colored screens. The reason is, that a white screen softens the light, producing flatness,* and does not control it effectively. Even for the latter purpose, a semi-opaque screen will be still more useful. This was pointed out by Mr. Kemp at a convention of the Photographers' Association of America.

The light is controlled by Mr. Kemp with a head screen, consisting of a frame, about thirty inches square, covered with muslin or thin calico, and, fixed to a very light wooden handle about nine feet long. The operator, placed near the camera, holds it over the head of the sitter, and, by raising or lowering it, moving it to the left or to the right, regulates the light, and when the proper effect is produced an assistant exposes the plate. This apparatus is not without objections, and not very handy, but as a means of directing the light, it is excellent.

It has been replaced by the head screen we have before described, which can be inclined upward or forward, turned to any angle, and placed near the sitter at a certain distance out of sight of the lens.

Let us make an essay of lighting with it.

(*To be continued.*)

"PICTURE TONES."

BY GEORGE W. KITTREDGE,

[Read before the Photographic Section of the American Institute.]

AT the October meeting of the section those who were present had the pleasure of seeing exhibited here a number of lantern slides made by about all the different processes known to the profession. In some of the processes employed in making these slides means had been resorted to to alter their tones from what we are left to infer were disagreeable colors, to something which should be more pleasureable to behold, and the examples shown covered a wide range of tones, varying from very red to very blue. This variety of color I reflected was not confined alone to slides or pictures upon glass, but was also to be found in prints or paper pictures.

The ordinary photograph, so familiar to all, presents objects to us in a color in no way suggested by nature. The more recently invented bromide prints present things in a perhaps more correct, but yet imperfect and often disagreeable, tone.

Following these reflections it occurred to me that as it seemed to be within the power of the photographic chemist to produce almost any color at will, why should he not then devote some attention to discovering what would be the best and most suitable tones to make use of.

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* Photographers know by experience, that a white background behind the sitter produces a similar effect, and that a black one produces contrasts, the model in both cases being lighted exactly alike. The reason of this has been explained.

I would like to hear this subject discussed from an artistic standpoint, and my object in this essay is not so much to say what would be proper as to assist in arriving at some artistic results by promoting a discussion upon the subject.

As soon as the subject of tones is mentioned to the photographer his mind immediately reverts to formula for solutions, etc., for that purpose. I would like to have him forget his chemistry for a time, and try to determine first, what the tones should be, and then to revert to his chemistry for a means to produce them afterwards. As the photographer has not yet succeeded in reproducing nature in her own colors, the photograph is to be considered, for the present at least, as a reproduction of any given scene only so far as its lights and shades are concerned. This being the case, the question arises what are the proper or best colors or tones to employ to represent nature most correctly and most artistically. Of course you will all answer mentally, black and white. We all consider a picture as composed of lights, darks, and middle tints or half tones. There may be many degrees or shades of color, from the darkest to the lightest parts of a subject, or there may be very few; and every true colorist knows the value of his half-tones, what expression, character and texture they are capable of, in fact, that they constitute the picture. With black given to represent nature's deepest shadows, and white to represent her highest lights, there are many ways of combining them to produce the middle tints. It is quite easy to say that the middle tints should be gray, but there are as many kinds of gray as there are colors in the spectrum; and each method of combining them results in a gray different in tone from that produced by some other method.

If we begin, for instance, by taking a ground of white and lay the black on thinly in the form of crayon or india ink, the resulting tones are more or less brownish. If we begin with a ground of black and proceed to lay the white on thinly, we produce tints of a bluish tone. If we mix black and white together we produce a disagreeable lead color. If again we begin with a white ground, as paper, and proceed to put the black on pure, solid and undiluted in any way, producing our tints by laying it on in fine particles or lines, between which the white ground appears, as in an engraving, the eye at a little distance blends the black of the ink and the white of the paper into a gray, which comes perhaps the nearest a perfectly neutral gray, of any. Thus it appears that the gradation of tints, varying from pure black to pure white, may possess any one of a great variety of tones or suggestions of color not in accordance with the perfectly neutral or colorless character to be expected from a combination of those two extremes. Then again, perhaps the most neutral gray, if produced, would not be the most agreeable one. So long then as the grays of our photographs must have some suggestion of color, let the photographer endeavor to discover what color or tone would most nearly represent nature as it is. And how else should he discover this except by an inquiry into nature's system of presenting herself to our view.

The colorist recognizes a certain relation existing between the tone of the light and the tone of the dark parts of any object or scene, no matter what its individual or local color may be.

As light and darkness stand in bold opposition one to the other, it is not to be wondered at that the lights should tone toward one color, and that the shadows should tone toward the opposite color. And it is this contrasting of tones that I would like to see the photographer embody in his productions. It is scarcely necessary to say that colorists speak of red and yellow as warm colors, and of blue as a cold color. Observation shows that the effect of sunlight is to add a warmth of tone to whatever already existing color it may chance to fall upon. This is more observable just after sunrise or near sunset than at any other time, at which times the housetops and hilltops often seem almost a bright red or bright orange, but it is nevertheless true that the effect of the sun's rays, no matter what the time of day, is to impart a warmth of tone to the entire light portions of the view.

Observation shows further, that no matter what various bits of local color may enter into the view before us, all the dark portions of that view possesses a certain harmony towards each other, that they possess something in common, and further, that the darker the shades and shadows of nature become, the more nearly do they approach to one color, which color is perhaps best expressed by the words "total darkness."

This harmony of color or tone which pervades the shadows of nature's pictures is due in a great measure to the condition of the atmosphere, and of course changes in color with the condition of the atmosphere. The same sun which illuminates the one side of all the objects in our view, also illuminates the atmosphere (or more properly speaking, the vapors, etc., held in suspension by the atmosphere), thus producing, as we view the dark parts of the scene through this atmosphere, something of the effect alluded to above, produced by putting white on thinly over a dark ground color, that is, a bluish or cool tone. Again, since we have seen that the lights are warm in tone, the coolness of the shadows will be further augmented by the contrast.

Of course this condition of affairs does not always exist, but will serve as an illustration of a principle by which a variety of effects might be produced.

Now let the photographer put together the factors as he has found them. The lights of the picture are found to be warm in tone; the shadows cool. The lights of his picture are represented by the paper upon which it is printed, and the shadows by the color of the chemical deposit or film used in the photographic operation. Could not the chemical part of his picture be toned or produced in a cool gray, and could not said chemical part be produced or printed upon a paper as a ground which is warm in tone, say creamy or slightly buff, so that in appearing through the chemical deposit or film, the middle tints of his picture would be warmer or cooler in tone according as they were lighter or darker? It seems to me that this sunny tone of the paper, appearing almost pure in the lightest parts of the picture, and then gradually giving way to cooler tone of the film or deposit, as we descend through the half tones of the picture, until it was entirely overcome in the darkest portions, would not only be pleasing in effect, but more nearly approach nature, so far as light and shade or monochrome reproductions are concerned.

It seems to me that various effects might be produced in this way. For instance, a photograph taken on a cold November day, when no sun was shining, and everything looked very blue or purple, as we sometimes see it, could best be produced by printing in a purple tone upon a paper of a cold white tint.

One taken by electric light could be reproduced by contrasting a bluish white in the lights with a neutral or a slightly warm tone in the shadows.

In advancing my ideas I have no particular photographic process in mind, nor any particular class of subjects; merely suggesting whatever method of making prints be used that would best accomplish the results.

It is probable that the tones sought after could be more easily produced upon glass than upon paper, in which case, if applied to lantern slides, the effect could be produced by painting the screen upon which the pictures are to be projected, a suitable tone for the lights of the pictures. These thoughts have been hastily thrown together, with no attempt at elaboration, but I hope I have made it clear that possibly a photograph might possess properly contrasting tones, instead of one tone, one for the lights and the other for the darks, by means of which some beautiful and pleasing results could be obtained, as they break and blend together to form the middle tints of the picture.

ON CERTAIN SURFACES FEEBLY SENSITIVE TO LIGHT.

BY J. W. OSBORNE.

[Presented before the Society of Amateur Photographers of New York.]

THE specimens which accompany this statement are suggestive, inasmuch as they tend to illustrate the widely-extended range of photo-chemical action, and the part it plays in every-day phenomena. In thinking and speaking of substances sensitive to light, photographers and others are apt to remember only the haloid salts of silver; chromic acid, under restraint, acting on organic matter; asphaltum, and a few salts of iron and platinum, which short catalogue does, in fact, include all the sensitive bodies used in practical photography.

But, as everyone knows, this list may be indefinitely extended (if the degree of sensitiveness be disregarded), and the accompanying specimens serve to show such extensions in certain directions. Broadly, the results should not be regarded as new, though in the manner of their preparation and presentation some novelty may be claimed for them.

On sheets Nos. 1 and 2, three samples of colored commercial paper will be found, which are bleached by light, and which give, therefore, a negative when exposed under a negative. On sheets 2 and 3, exposed papers, colored for the purpose with eosine and methyl violet, are exhibited; which likewise establish the fact that these colors under the luminous influence give rise to colorless compounds. But, though a great number of colors used in the arts are bleached by light more or less rapidly, this is by no means a universal rule. On sheet No. 1, a small piece of commercial orange paper is shown, part of which has been darkened by exposure. Specimens of paper colored with picric acid will also be found on sheet No. 4, in which the darkening to a brown is very marked.

The duration of the exposures required to produce these photographic effects is very considerable when the change is carried to its maximum, varying from twenty to thirty-five, or forty hours in direct sunlight, which was the only kind of exposure employed in these experiments. Such substances are, perhaps, from four hundred to eight hundred times less sensitive than chloride of silver paper. Indications of photo-chemical action are, however, visible in much less time. On sheet No. 2, a piece of eosine paper, exposed under two strips of black lace, shows a faint positive after half an hour. Also, on sheet No. 3, a piece of methyl violet paper similarly exposed, shows the gradually increasing strength of the positive (by contrast), after one, two or three hours.

The fact that printing and writing papers become brown by age is familiar to most persons; but that this change is essentially photographic is not a common belief. On sheet No. 5 will be found pieces of newspaper taken from the New York *Tribune*, the Baltimore *Sun* and the Washington *Evening Star*, on which photographic images have been impressed by simple exposure under a dense negative. These papers were subjected to no preparatory treatment, establishing the fact that the newspapers we read daily are (probably all) printed on papers sensitive to light and adapted for the production of positive pictures. On sheets Nos. 6, 7, 8 and 9 such pictures will be found on *Evening Star* paper, made by direct exposure to the sun's rays, under collodion negatives. A fact of some significance is, that some of the experiments on *Evening Star* paper were made on sheets which had been very carefully washed before exposure. The washing was done by causing a very rapid film of water to flow over and under the paper at the same time for two and a half hours. The paper was then dried and exposed. This treatment did not seem to affect the sensitiveness of the paper to light, and the presumption would seem to be justifiable that the sensitive compounds present are not soluble in water. The time required to produce the maximum effect is about fifty hours, but this must often be exceeded if any part of the negative is in the least obscured by cloudiness. The color produced by exposure on such papers is peculiar. When the paper is clean and in good condition, as in Nos. 6, 7, 8 and 9, a very pure golden bronzy color is produced, which can be appreciated only in strong white light. I will not now discuss the nature of the resulting brown-yellow compound, except to say generally, that it is not easily acted on by chemical re-agents, and that it undergoes a very peculiar darkening by the application of heat alone; as by ironing the paper bearing such a photograph with a moderately hot flat iron. On sheet No. 8 a piece of paper is mounted with two tints on it longitudinally, half of which (divided across the tints) was heated in the way described, and which is, in consequence, much darkened. The print above it on the same sheet was also so developed or intensified.

Sheets Nos. 10, 11 and 12 have mounted upon them pieces of white pine, of different qualities, upon which photographs have been produced by exposures under stencil negatives, made by cutting openings in tin-foil, and pressing it into close contact with the surface of the wood by means of a plate of glass properly clamped thereto. The exposure required to produce these photographic images varies from thirty to fifty or sixty hours. On sheet No. 13 a piece of poplar is shown, the picture on which was produced in twenty hours, for it seems probable that of all the woods in common use poplar is the most sensitive and gives the darkest color when fully exposed. In making these experiments it is important to obtain a fresh surface on the wood, to effect which, in the case of an old piece, a good deal of the outside has often to be removed by the plane, for the penetration of the light is often considerable.

It seems probable that this darkening of wood (which is very commonly, though rather vaguely attributed to the action of the air), is related to the photographic effect obtainable on printing papers. These are now hardly to be had without an admixture of wood pulp, and the present inquiry (inasmuch as it proves the phenomena to be strictly photographic), may have a practical bearing if it points to means which will keep printing papers white indefinitely.

On sheet No. 1, the bleaching action of light upon a dried leaf is exhibited, and on No. 5, a piece of parchment is mounted, which has also, though substantially white, become a little whiter where the light has acted. As far as it goes, this would tend to show that the "yellowing of parchments by age," is not a photo-chemical process. This parchment had a very long exposure.

As connected with this general subject, I would call to mind the investigations of Mr. Thomas Gaffield, of Boston, who established conclusively more than twenty years ago, the slow effect of light on colorless glass, in gradually giving it color; sometimes pinkish, and sometimes yellow; the former being apparently due to a re-oxidation of the reduced manganese employed to counteract the iron. These changes often required years for their completion.

Experiments only just completed, tend to show that pure cellulose in the form of the finest filtering paper is not sensitive to light, at least a constant exposure in a horizontal position to diffused and direct sunlight, failed in two weeks to produce any perceptible change in color. On the other hand the same filtering paper, covered with picric acid and similarly exposed for the same time, about one hundred and forty hours of diffused and direct sunlight, gave a coloration as before, when sized and calendered paper of the best quality was the kind treated with the acid. On sheet No. 14, two pieces of the above filtering paper, prepared with picric acid, and exposed horizontally as stated, will be found, but one of them has been washed in hot water till all the soluble matter has been removed. This treatment of the exposed print tends to raise the contrast by letting the darkened parts appear as on white paper. It also shows the insolubility of the darkened portions in hot water, the production of which was effected by light alone.

Simultaneously with the above exposures, another was made of the same duration and in the same way. This was the presentation of a thin stratum of commercial picric acid on glass, to the same illumination as that already mentioned, under a stencil tin-foil negative and a plate of glass covering the same. The picric acid was darkened as before very decidedly, though it would be difficult to exhibit the results in a satisfactory way at a meeting of the society.

In concluding this paper, and to account for its incompleteness in certain ways, I may be permitted to explain, that the investigation, the results of which are here given, was not undertaken with a practical purpose in view; but simply to determine the limits within which bodies may be properly described as sensitive or non-sensitive.

A SIMPLE METHOD OF TESTING PHOTOGRAPHIC MOUNTS.

BY E. W. FOXLEE.

[A communication to the Photographic Club.]

THERE is no question whatever that with all the improvements which have been made in photographic processes, silver prints are still as fugitive as ever—some say more so. I shall not here refer to the different causes which may conduce to fading, but simply confine myself to one—and, I believe, a prolific one—namely, the mounts. A large number of those now in the market are, undoubtedly, totally unfitted for photographic purposes, and, if silver prints be mounted upon them, permanence must not be expected. I need not dwell upon the hardship that is inflicted upon a professional photographer, who takes every precaution in the fixing and washing of his pictures in order to make them as permanent as possible, when he is supplied with mounts which contain such deleterious matters as will render all his care abortive. His reputation and business must necessarily suffer, and seeking redress in a court of law, although he may gain his cause, is not always satisfactory. The mounts, it is true, might be submitted to an analytical chemist before they are taken into use, but this would be somewhat costly, and moreover the vendor could, and probably would, dispute as to whether certain matters which might be discovered in them would act injuriously upon a photograph.

The object of the present paper is to lay before the club a simple "rough and ready" method by which anyone unacquainted with chemistry may determine whether mounts contain anything that will act injuriously upon the photographic image. I take it that, as a rule, photographers do not care what may be the nature of the deleterious matters, it being sufficient for their purpose to ascertain if any at all be present.

The method I am about to describe is one I have had in use for some time, and is similar in principle to an excellent one described in the *Photographic News*, though it is put into practice somewhat differently. The method there given is to mount a print on pieces of the mounts to be tested in juxtaposition with a piece of mount of known purity, and then keep in a damp condition. My plan is to keep the face of one part of a print in close contact with the mount to be tested, while the other portion is insulated from it with an impervious material, the whole being retained slightly damp, and, if possible, in a moderately warm place. We all know that a silver print subjected to this trying ordeal will, sooner or later, succumb. But if that portion which is in contact with the mount changes quicker than the other, it is evident that the mount must be the cause of the deterioration. If, however, the picture fades evenly all over, the mount may reasonably be considered suitable for its purpose. This plan, I fancy, possesses some little advantage over that described in the *News*, inasmuch as the face of the print, instead of the back, is in contact with the mount, so that the effect, if any, is produced with greater rapidity. Furthermore, no mountant is used which might prove a bone of contention. In the recent suit, Biddle *versus* Fry & Co., it was contended that starch was an improper cement to use with the mounts in dispute.

The procedure I adopt is as follows: Take a light print, made preferably from a thin negative, and damp it, together with a piece of pure paper, such, for example, as Joynson's writing paper. Now, on the mount to be tested, put two or three thicknesses of paraffined paper so as to cover, say, one-half of it. Then place on the print, face downwards, on that the writing paper, and secure them in position with a couple of paper fasteners. Next back up with a pad of damp, not wet, blotting-paper, and place between two pieces of glass to prevent the moisture evaporating, and put under heavy pressure.

The print should be examined daily. Sometimes—in an hour or two even with some mounts—the print will show a stain from soluble color diffusing itself from the mount. Here is an example. This print showed a stain in less than a couple of hours, yet, at the end of seven days, although that half which was in contact with the card had become dyed a decided red, there is no actual fading of the image itself. The dye has not acted destructively on the image. Here, however, is another sample of board, where the staining, after seven days' contact, is far less than in the other case, but the image has been almost completely destroyed. In the next two examples—eight and ten days' contact—it will be seen that there is very little, if any, staining, though there is very strong evidence of fading, and this began to show itself on the second day. Here are two more specimens which, after ten and eighteen days respectively, although they are somewhat stained, the image itself appears to be intact. All these mounts, as you see, are the dark enamelled and more expensive kind.

Here are two common cards with a surface somewhat similar to the more costly ones just shown, printed with bronze, which were not intended for photographic purposes. In each case the bronze lettering shows on the photograph, yet the image is otherwise unaffected, except that in one it is very slightly tinted. Both were kept in contact for three weeks. The next specimen is a white enamelled card which, after twenty days, has produced no injurious effect, though the enamel, in places, adhered to the print, and has since been washed off. The portrait on the other side of this card has been there for about fourteen years. This is a very cheap and common cream-toned board, not enamelled, which, after fourteen days, shows no injury whatever, although the print is an exceedingly delicate one. Here is another plain board of the cheap kind, which by the treatment has become mouldy and so spotted the print, but has not otherwise injured it after fourteen days' contact. As the mould made its appearance in a few days I conclude that the paste, or the material used for the card, must have contained the germ.

I could have brought forward many other examples had time permitted; but as I promised a short paper I will not inflict them upon you. What I have shown, I think, has been sufficient to prove that the method described is a simple yet efficacious one, and that photographers need not consider themselves quite so much at the mercy of the mount makers, and what they supply, as hitherto.

[*From the Photographic News.*]

THE PRACTICE OF NEGATIVE RETOUCHING.

BY W. E. DEBENHAM.

No. 4.—THE PENCILS.

THE next subject for consideration is that of the pencils to be employed. These should be of the finest quality obtainable, but as price and quality are not invariably concurrent, it is well to point out the characteristics by which a good pencil can be distinguished from a bad one. The great points to be observed are fineness of texture and uniformity of the lead. Want of uniformity shows itself by some portions of the lead marking more freely than other portions, so that a mark which with a certain pressure of the hand is intended to produce a certain depth of stroke may be lighter or heavier than desired. Want of fineness of texture is a still more serious evil, and a pencil deficient in this respect should on no account be used. The evil will show itself by a crumbling away of the point. This not only necessitates constant resharpening, but worse still, the crumbling fragments are apt to mark the negative with places stronger than the rest of the work. The lead where the point has broken off, falling on the plate with a fresh unpolished surface, and, perhaps, a fragment of lead under it, makes a mark that cannot easily be got rid of. Short of actually finding out by these evils occurring, the defective character of the lead, a judgment may be formed from another sign. A good lead of fine and close texture bears a high polish, whilst an inferior one of the same degree of hardness shows somewhat grayer and duller. The difference is not great, but is yet perceptible, and will show on the sharpened points as well as along the side of the lead.

Pencils of various degrees of hardness are required, and these degrees are represented by numbers with some makers, and by letters by other makers. The degrees in use run from B or BB to HHH, or from No. 1 to 5, the higher numbers indicating great hardness. Harder pencils than these are sometimes recommended, but I have not found any occasion for their use. A good deal depends, however, upon the lightness or heaviness of the touch of the individual as to what degree of hardness will be required for a particular depth of stroke; whilst the character of the varnish or medium used, the intensity of the negative, and the strength of the places to be worked upon, will determine the choice of a harder or softer lead for use as occasion may require. A practiced retoucher will be able to do with one lead of a medium hardness, work that it would be unsafe for a less experienced hand to attempt without a change, so that old hands will often not require to change their pencils all through a negative, and, indeed, for several negatives in succession, if of fairly uniform quality, and without any very transparent places requiring an extra amount of deposit upon them.

Lead pencils in use are in two forms. The first is the old kind fixed in cedar, Fig. 1. When these are used, the wood should be cut tapering rather finely, and half-an-inch or rather more of the lead should be exposed. If cut as for writing or ordinary drawing purposes, the work will be too much hidden by the wood. The exposed portion of the lead is sharpened slightly conically to preserve its strength, to a fine point.

Fig. 1.

It is more customary now to use pencils with movable leads in holders, as shown in Fig. 2. The trouble of sharpening in so far as cutting away the wood is concerned is dispensed with, and the pencil is kept of one length and weight. The length of lead which it is desirable to expose, and the kind of point to be given, are the same as when solid wood pencils are in use. It is desirable when using these holders to have at least three of them for leads of differing degrees of hardness, and not to depend upon one holder, and changing of the leads in it, a course involving loss of time, and some additional risk of breakage. The holders should bear some distinguishing sign by which they may readily be recognized. The most marked way is to have them of different colors, and there is no difficulty in this, as they are made of red, black and polished cedar. If the retoucher has them all of one color, and not marked by distinguishing letters, it is very easy to cut notches corresponding with the number on the lead contained in the holder.

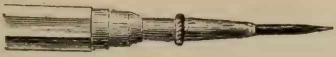

Fig. 2.

As an example of quality of lead being sometimes independent of price, I may mention, that noticing the good quality of some pencils that had been obtained for writing purposes at a few pence per dozen, I thought I would see if they were good enough for retouching, and sharpening one, found it work very well indeed. I used that pencil right off—it was marked HB—for several heads without wanting any change. Of course, the probabilities are not in favor of finding leads of fine quality in low-priced pencils, and it would be ridiculously misplaced economy to use any lead of an inferior quality, whatever the price.

For sharpening the point, the most convenient thing is the fine glass paper block sold for the purpose. When one surface is worn out there is only to strip it off and another is ready for use. When these blocks cannot be obtained, a strip of fine glass paper is attached to a piece of wood or millboard, but care must be taken that there are no lumps in the paste or glue, which would throw up a ridge on the surface of the glass paper that would interfere with its proper use. The lead is laid on its side and ground away with a motion from side to side, whilst the holder is slowly revolved to expose all sides to the cutting action of the glass paper.

After sharpening, the lead should be wiped before being applied to the negative, otherwise a little of the powdered lead adhering to its surface may cause the first stroke or two to be blacker than was intended, and not in keeping with the rest of the work. For wiping off this powder, the lead may be drawn lightly through a soft cloth held between the fingers, or the plan may be adopted of drawing it through the pile of a piece of Utrecht velvet, such as is used for covering chairs and other articles of furniture.

THE BULLETIN FOR 1889.

The steady growth of our subscription list, the scores of letters, testimonials of the value of the Bulletin to its ever increasing number of readers, leaves us without doubt that the policy we have followed heretofore has been acceptable to those who wish the best and latest records of the development of photography. During the past year we claim that we have presented to the readers of the Bulletin the very best and most carefully presented information on all photographic subjects. The original articles in the Bulletin have been from the best and most practical workers, and also from the highest scientific authorities on the topics of which they have treated. We have thus been able to give the most valuable information in both the practical and theoretical phases of our art.

At the beginning of the year we laid down a certain line of work at a high level and we have kept it at that level throughout the year. We did not offer our readers any special inducements or make promises that we could only keep for a short period; but we have given the very best information attainable, and this throughout the whole year that is past. Now we propose to follow the same line of procedure during the coming year. We propose to give our readers the best and latest photographic information, both American and Foreign, that is attainable; and we shall do this regardless of expense, feeling sure that our subscribers have long ago learned the truth of the statement "The best is always the cheapest."

Our German and English correspondence, which we claim is second to none, will be continued as heretofore. Our Reports of Societies will be given in the same careful manner as was followed last year. In many cases these are from the pens of our special reporters. Our Question Columns continue to be an important feature of the BULLETIN, and will be kept up in the same careful and generous manner by our Editors and their practical staff.

We claim that there is not another photographic journal in America that gives so much really valuable information for so little money. The translations of papers from foreign journals alone, which have appeared in the pages of the BULLETIN during the past year, were worth much more than the cost of the subscription to every progressive photographer. And there is not another American photographic journal that has attempted to give such translations. Added to these things, there has appeared in every issue an illustration of high value, from the art side of photography. Not mere photo-lithographs or rough process plates, but silver prints, aristotypes, bromide prints, photogravures, the highest phases of photographic and photogravure printing. These illustrations alone are worth twice the value of the subscription price of the BULLETIN.

What we have done in the past we are prepared to do again, and we promise our readers that they shall have the very best value for their money. We do not raise the price of the subscription, and we only ask that our readers will do their share in helping us to furnish the best photographic information at a small cost, by asking every one interested in our art to look into the merits of the BULLETIN; an examination will prove that the journal is worthy the patronage of every true lover of photography. We have a goodly subscription list now, but there is room for many more names upon it, and we hope that those who intend to promote the good work next year will send in their subscriptions at an early date. THE PUBLISHERS.

◆

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I always read the BULLETIN, and think it very interesting. F. K. HART.

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F. W. SCRIBNER.

It contains a good deal to interest both professional and amateur photographers. FELIX REIFSCHNEIDER.

You print a good work on photography; hope you will make it as interesting through 1889. E. J. CHRISTMAN.

Please do not take my name from the list of subscribers for the BULLETIN, for I am lost without it. J. E. ROTE.

I am very much pleased with the BULLETIN, and find it a very valuable journal; it ought to be patronized by all photographers and artists.
W. S. KRIEBEL, Artist.

ANTHONY'S PHOTOGRAPHIC BULLETIN, although chiefly circulating amongst photographers on the other side the Atlantic, is now, however, pretty well known in this country, and with its capital illustrations and useful matter, always does both editors and publishers great credit.—*Photographic Art Journal.*

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AMERICAN INSTITUTE—PHOTOGRAPHIC SECTION.

REGULAR MEETING—DECEMBER 4, 1888.

Mr. H. J. NEWTON in the chair. The *Chairman*, after calling the meeting to order, announced that the first business was the reports of committees.

The *Secretary* reported that he had received for the section the usual photographic papers and periodicals regularly contributed to the section; and a vote of thanks was tendered to each of the publishers for these additions to the library of the Institute.

The Chairman of the Executive Committee reported that the programme, as announced on the cards of invitation, would have to be changed somewhat on account of the sickness of Mr. Cusacks, who it was expected would entertain the section on the subject of photography as connected with newspaper illustration. In lieu of this, Messrs. Fisk and Elmendorf had kindly consented to give a lantern exhibition. As both these gentlemen were counted among our most famous experts in this branch of work, it was hoped that the interest and pleasure of the audience would in no way be lessened by this enforced change in the programme.

The Chairman further announced, that the next meeting of the section would be held on Wednesday evening, January 16, 1889, and that the principal paper of the evening would be given by Morris Cooper, Esq., on "Photography as applied to the Law."

Professor Elmendorf was now introduced, and, after a few preliminary remarks, proceeded to exhibit and uniquely describe a charming collection of slides — contrasting some of the famous places of the old world with those of the new.

As these views were all taken by himself in his search for recreation, his appreciative audience at once recognized his skillfulness as a photographer and an artist, while at the same time they could not fail to imagine the thousands of miles to be traveled, the expense of these journeys, and the time expended in obtaining these gems of photographic art. Hence his auditors, conscious of their indebtedness, tendered to him a hearty and unanimous vote of thanks.

Mr. A. D. Fisk followed Professor Elmendorf with a very interesting collection of slides; and these were followed by some four or five by Mr. O. G. Mason, which slides he said were made some twenty-five years ago, and might, perhaps, be useful as a means of noting the progress made in this special branch of the art.

Mr. George W. Kittredge read a paper on "Picture Tones"—see page 749—and the section then adjourned.

THE HARTFORD CAMERA CLUB—THIRD PUBLIC EXHIBITION.

THE third public exhibition of the Hartford Camera Club was opened at No. 222 Main Street, Ætna Building. The exhibition was much better in every respect than the two preceding ones. The display was larger, more varied, and the pictures and views of a much better quality than any before exhibited. There being no charge for admission, the rooms were well filled during the entire day by persons interested not only by the work of some friend, but by the beauty and finish of the views displayed. The exhibition committee, Herbert O. Warner, William J. Hickmott and Albert H. Pitkin, arranged the pictures in groups, that showed the merits of each exhibit and gave to them the best possible advantage for inspection.

The exhibit was arranged in three classes: For amateur work only, the mixed class, and for exhibition only. The amateur class included landscapes, marine views, architecture, interiors, animals, instantaneous effects—except surf, sail and animals—portraits, single figure groups, composition pictures, flash light pictures, detective camera pictures, enlargements and transparencies. The mixed class included composition of subjects and development of plates by the exhibitor, and prints made by a professional. The first department of this class took in all out-door views; the second, interiors, and the third, portraits. For exhibition only, photographs, of any subject, not entered for competition.

The prizes awarded by the judges, Charles L. Howard, Charles R. Loomis and George W. Stuart, were as follows:

For best landscape views, first prize, H. O. Warner. Honorable mention, Dr. George L. Parmalee.

For best exhibits of marine views, first prize, H. O. Warner.

For best views of architectural views, first prize, Mrs. J. C. Kinney.

For best exhibit of interior views, first prize, Dr. George L. Parmalee.

For best collection of instantaneous views, first prize, E. H. Crowell.

For best exhibit of portraits, first prize, W. J. Hickmott.

For best exhibit of composition pictures, studies, first prize, Mrs. S. C. Kinney.

For best exhibit of transparencies, first prize, F. D. Barry.

For best exhibit in the mixed class, first prize, T. S. Steele. Honorable mention, C. L. Goodwin.

Among the other exhibits offered for exhibition, all of which were very fine specimens of amateur photography, are the framed pictures of F. A. Jackson and F. E. Hotchkiss, of New Haven. A collection of "blizzard pictures" attracted much attention. One showed a forty-foot snow-drift on the New York and New Haven Railroad, at Green Farms, photographed by C. R. Bronson, and one of the City Hall Park of this city, taken by Olsen. F. H. Chapin exhibited a number of Rocky Mountain views. Mrs. J. M. Thompson showed a collection of pictures of views in Scotland, taken on a recent trip to that country. Mrs. J. C. Kinney's collection of composition pictures, studies, were particularly fine.

Henry F. Smith and Dr. A. J. Wolf had on exhibition a number of pictures taken with a microscope. The views showed, among other things, the lances of the mosquito's beak; the sting of a wasp; a young spider; a female mosquito; a section of a frog's stomach; a drop of blood, from a pigeon, a mouse, a dog, and a drop of human blood. The infusoria in the drinking water of this city was also shown.

George M. Barney, of Springfield, showed a collection of Southern views, which were very beautiful. The bromide enlargement of the United States Capital Dome, from a negative made by E. M. White, was very pretty. T. E. Steele exhibited a large number of views taken in Florida, Georgia and North Carolina, the most beautiful of which were scenes in and around the famous Ponce de Leon Hotel at St. Augustine. James R. Cone, the president of the Hartford Camera Club, exhibited a lot of surf, landscape and interior views.

Among the many beautiful and varied collections of views for exhibition only were those of George R. Goodman, George M. Bond, Henry W. Fuller, of this city; Mrs. J. C. Paulison, of West Hartford; Mrs. J. C. Kendall, of Norfolk; H. L. Aldrich, of Springfield; N. A. Gibbs, of Norwich, and A. L. Brandegee, of Bristol.

THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

REGULAR MEETING, DECEMBER 11, 1888.

President CANFIELD in the chair.

The minutes of the last meeting were read by the Secretary, and on motion of Mr. Champney were approved as read.

The *President*—The scientific programme covers several papers, and an exhibition of photographic apparatus.

The first paper is entitled "Development by Separate Solutions," a paper furnished us at the solicitation of the members of our Committee on Papers and Publications, by Mr. David Bachrach, Jr., of Baltimore. It has been handed to me to read. (See next BULLETIN.)

If there are any comments to be made by our members upon this paper I will be very glad to hear them. Some of our most useful results have been brought about in this way, in discussing these questions that have from time to time been brought before us.

Mr. BEACH—I might state, Mr. President, that two or three years ago I pursued a series of experiments in that direction, and found that it operated very well. The only trouble was it took a little more time to develop the plates, which I thought was rather an objection to amateurs; still, where there is a large number of plates to be developed it is probably an excellent plan, and the suggestion of using hydroquinone in this way is a new one.

Mr. DUFFIELD—I have experimented a little with this method; I soaked my plates in water until the film became soft, and found that they would develop in one-half the time required if not previously soaked. It seems to me that there is an advantage in it for over-exposed plates, although Mr. Bachrach does not say so. I have not tried it to any extent, but what little experience I have had shows me that there are benefits to be derived from this system of developing. A gentleman of Brooklyn—amateur—who was here the other night, told me he used it altogether.

Mr. LEAMING—A few years ago I saw Dr. Stratford use single separate solutions, first soaking the lantern slide he was making in the pyro for one to two minutes, according to the density desired, and the result was that the plate came up with extreme rapidity in the alkaline solution. It has to be watched very carefully in that regard. It is faster than the normal way.

Mr. NEWTON—Soaking a gelatine plate in water will facilitate immensely the development, by every process that I know of, and if the plates were soaked first in alkali and then afterwards in the other developing substances, the result would be about the same. I do not know that I have developed gelatine plates in that way, but I have the collodion emulsion plates, many times, usually soaking them in the alkaline solution first; the whole image would appear before I put the plate in the pyro.

Mr. A. PEEBLES SMITH—That is the development recommended for Cramer's fastest plates, marked with sensitometer Nos. 60 and 70.

The *President*—Possibly some of our members will have more to report on this subject at a later meeting.

Dr. HIGGINS—I rise to propound a query. If I understood Mr. Newton aright, he regards the development of any plate in any developer as being rendered more speedy by previous soaking in water?

Mr. NEWTON—The development of any gelatine plate, by any process that I know of, will be greatly facilitated by first soaking it in water.

Dr. HIGGINS—If we take an exposed gelatine plate and develop it with ferrous oxalate solution, will we not have a far more rapid development by not soaking it in water first.

Mr. NEWTON—I don't think so.

Dr. HIGGINS—I only make that inquiry of Mr. Newton, as I know he has had an immense deal of experience in oxalate development. In fact having myself almost entirely set aside all other modes of development, I rang the changes on it pretty thoroughly, and I am confident that my memorandum books will show that to have been my experience. I tried giving the plates so many minutes in water, and then afterwards immediately transferring them to the oxalate solution for a measured period, and adding the two times together. For instance, if they were two minutes in water and ten minutes in the oxalate solution, that would make twelve minutes. Now, if one-half of the plate (because that is the way I always operate, by cutting the plate in two) had been plunged directly into the ferrous oxalate solution, the development would not be over six or eight minutes, and I explain it in this way: That the power of the ferrous oxalate developer lies in its nascent qualities, arising immediately on the union of the iron salt with the potassium oxalate. Every second of time after mixing weakens it; changes take place, and it is, as it were, a dead solution, so that after three or four negatives are developed it operates only half as rapidly. Now reason seemed to tell me that the film when soaked with water diluted the developer by the amount of water it had absorbed—you might say one-half. And so I propounded the query whether Professor Newton had noticed the same thing that I did?

The *President*—Gentlemen, Mr. Ramsperger has to show us to-night the Steinheil detective camera, of foreign manufacture. If he will be kind enough to explain it we will be glad to listen to him.

Mr. RAMSPERGER responded as follows: I am here this evening at the invitation of your Committee on Apparatus, to show and explain to you the detective camera, made by Steinheil, of Munich.

The camera I have is for plates 9 x 12 centimetres, this being a European size, a little short of 4 x 5 inches, but by employing "kits" the regular American sizes under 4 x 5 inches can be used readily in this camera. Steinheil is now preparing these cameras for plates of the favorite American dimensions.

You will notice that this camera is very compact and is a very substantial piece of workmanship, built of solid French walnut, finely polished, and capable of withstanding a great amount of rough usage. Its external dimensions are: 9 inches in length, 5½ inches in breadth, and 4 inches in height.

The principal feature of this camera is the magazine in the back, capable of holding twelve plates or films, with a very simple and effective device for changing the plates through the medium of the changing bag, which is permanently attached to the top of the magazine, and when not in actual use is protected by a cover of same material as the camera box.

The *President*—Are there any questions to be asked of Mr. Ramsperger? We are certainly very much obliged to him for introducing to our notice this form of apparatus. It is a little different from the ordinary detective camera in its magazine feature. I suppose he will be glad to explain it any further to the members after the other business of the evening is transacted.

Mr. WILLIAMS—I would like to ask, Mr. President, if there is any reason why this arrangement just exhibited to us cannot be applied to an ordinary camera as a changing box; it probably has been done, and I am not aware it?

Mr. RAMSPERGER—If you ask my opinion in regard to it I will say that I think there is no reason why it cannot be done. I think it can be so constructed that it may be employed with any existing camera as a plate holder or "changing box," as you are pleased to call it. The action is a positive one and it cannot fail. The mechanical arrangement is so simple that there is nothing to get out of order and it must work. There are very few parts to it.

Mr. WILLIAMS—Is it possible to expose one plate twice before you discover it?

Mr. RAMSBERGER—You are quite right in calling my attention to that point. You have this ground glass in front and you have exposed your front plate twice, but you have no impression on it because this ground glass is backed by this piece of metal, which prevents the light from striking that plate; so when you set off the shutter it is without any effect on the plate.

The *President*—Next in order is the report of the Chemical Committee. The Chairman, Mr. Stebbins, is ill this evening, but he has sent this report, which I will read. (See next BULLETIN.)

Dr. PIFFARD—I move that a vote of thanks be tendered to the Chemical Committee.

Motion carried.

The *President*—The next paper is entitled "Collodio-bromide Emulsions," by Mr. F. C. Beach, with demonstration. Mr. Beach has the floor.

Mr. Beach then read his paper (see next BULLETIN), after which he successfully demonstrated the process, cleaning a glass plate, edging it with rubber solution, and flowing it with the emulsion, then he exposed it behind a negative and developed a lantern slide transparency; and just before adjournment put it in the lantern for exhibition.

The *President*—I will take the liberty of changing the order of the proceedings slightly. Instead of having the other apparatus shown at this point I will, after making a few announcements, read a paper which Mr. J. W. Osborn kindly sent me at my request, announced on the programme as "Observations on Substances Feebly Sensitive to Light," which is accompanied with a number of the most interesting specimens. I think it is one of the most interesting papers we have had before us in a long time.

Previous to reading the paper, however, I will announce that since the last meeting of the Society we have had a very gratifying accession to the membership. The full list is as follows:

I. Adler, M.D.; E. T. Birdsall, E. T. Gibson, P. H. Mason, M.D.; A. L. Simpson, G. R. Allerton, Dr. M. B. Feeney, S. Quackenbush. As Active Members: Mr. A. P. Smith a subscribing member, and Mr. G. H. Hull a corresponding member.

I will also read a list of donations to the Society received since the last meeting. First and foremost, there is this letter from Mr. Henry V. Parsell, well known as one of the most liberal supporters of the Society:

NEW YORK, November 22, 1888.

C. W. CANFIELD, ESQ., President,
Society of Amateur Photographers.

DEAR SIR,—I placed in the hands of Mr. F. C. Beach six certificates on which I loaned your Society ninety dollars. Please accept them as a gift, which will relieve you from any further anxiety. I hope Mr. Smith and others now will do the same.

With great respect to yourself and Board, I remain, very respectfully,

HENRY V. PARSELL.

The *President*—This is another example of Mr. Parsell's generosity, coming as it did at a time which was in certain respects critical in the history of the Society; it was very cheering. I think we should pass a most hearty vote of thanks to Mr. Parsell for his gift.

On motion of Dr. Piffard a unanimous vote of thanks was tendered to Mr. Parsell.

(*To be continued.*)

ROCHESTER ACADEMY OF SCIENCE—PHOTOGRAPHIC SECTION.

REGULAR meeting December 4th, nineteen members and a large number of visitors present.

President CROUGHTON in the chair. The Room Committee gave their report, which was accepted, and after some discussion was laid on the table.

Resolutions on the death of Vice-President Hagreen were read, which on motion were accepted, and a page in the minutes ordered set aside to his memory.

The *President* read an interesting paper on "Flash-light Photography," written by Mr. John Bartlett, of Philadelphia; he also exhibited some very fine flash-light pictures made by Mr. Bartlett.

A demonstration of the flash-light was next given, which proved a success; the Blitz-Pulver compound was used to produce the flash.

A vote of thanks was given Mr. Bartlett for his interesting paper and pictures, and to McCollin & Co., of Philadelphia, for the Blitz-Pulver compound used. The meeting closed with a lantern exhibition of flash-light pictures.

JAMES STREETER,
Secretary.

SAINT LOUIS CAMERA CLUB.

ST. LOUIS, December 3, 1888.

THE regular meeting of the St. Louis Camera Club was called to order by *President* BAIN, with twenty-one members present.

Minutes of November 19, 1888, were read and approved as read.

Mr. BUTLER's paper on "Plain Paper Printing," of which the following *resumé* may be of interest, was then read:

Plain salted paper, such as Clemons' "Mat Surface," is readily procured, and yields prints with difficulty distinguished from platinotypes, when the original negative is a good one.

The bath should contain 60 grains nitrate of silver to the ounce, and should be neutralized with ammonia. The paper should be floated in the usual manner for two-and-a-half or three minutes, then removed, the surplus solution blotted off, and hung up to dry.

When dried, it should be cut to the sizes required for printing, and then fumed for thirty minutes in the usual way.

The printing is carried on in the ordinary manner, remembering that the prints must be slightly darker than on albumen paper, as the image is further reduced in toning and fixing.

The prints are next washed in three or four changes of water, and reddened in a weak solution of common salt, following by washing in one change of water.

The toning bath, which the writer finds gives excellent results, is the following:

Chloride of gold............	1 grain.
Bicarbonate of soda.........	10 grains.
Water........................	8 ounces.

Should more than one sheet of paper be used, the quantities above given must be proportionately increased. Do not put many prints into the toning bath at once, as they tone so rapidly as to be easily over-toned. If the toning is carried only so far as to give purple tone by reflected light, the prints will come out of the fixing bath with brown tone; if purple by transmitted light, with purplish-black tones, which are very effective.

After washing in one change of water the toned prints are transferred to the fixing bath of 3 ounces hypo to 16 ounces water. Here they remain for about twenty minutes, when they are removed and carefully washed to remove the hypo, then mounted on suitable cards.

The paper was fully illustrated with specimen prints, showing clearly the simplicity and artistic quality of the results.*

Messrs. Withnell, C. M. Alexander and Blather were appointed a special committee to ascertain the cost of securing a suitable hall for a public lantern exhibition.

A flash-lamp kindly loaned by Mr. Shenard was then exhibited to the club, and a trial negative made with it; this was later developed in the presence of the members, and resulted in a pretty fair negative.

The Cincinnati slides exhibited to the club were greatly enjoyed, as they were really fine.

Adjourned to meet Monday, December, 17, 1888.

W. M. BUTLER,
Secretary.

BOSTON CAMERA CLUB.

AT a meeting of the club held at the rooms December 3d, two resignations were accepted and four new members elected. Nominations for officers for 1889 were made, and will be acted upon at the annual meeting in January.

The club voted to purchase an additional lantern, which with that already owned by the club, gives it a fine equipment of a double dissolving apparatus for club meetings and a smaller but equally effective single lantern, which members can use at their homes upon application.

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*Specimen prints kindly sent us by Mr. Butler are of excellent quality and can scarcely be distinguished from platinotypes.—EDS.

Mr. WILLIAM G. REED then made his report on "The Illustrated Description of Boston," the preparation of which has been in his charge, as a committee of one, since March last.

It consists of a text of about 15,000 words, requiring from one and one-quarter to one and one-half hours to read aloud. Each page of the text bears an albumen silver print, pertinent to the same. Beneath each print is all technical information as to the make of both negative and positive, such as usually called for at exhibitions. The whole thus makes an illustrated book which individuals may, singly, peruse.

Lantern slides have, however, been made from all the negatives, so that any society that borrows the set, can give an entertainment to its friends, by having some one read the text aloud, and, by the aid of a stereoptican, project the views upon a screen. Each slide is mounted with the Boston Camera Club standard mat, giving full information as to subject, maker, and process.

There are sixty-five prints and slides.

The text was written by Mr. Arthur Hooper Dodd, and the negatives and slides were made by numerous other members of the club.

The whole has been prepared in duplicate. One set will be shipped to England to exchange for similar descriptions of English cities or scenery. The other set will remain in this country, to circulate among such amateur photographic societies as wish to borrow.

The Chicago and San Francisco Clubs are at work upon similar affairs, and the first interchanges will, of course, be with them.

Any societies desiring to examine and exhibit this "Illustrated Boston" may apply to E. F. Wilder, Secretary of the Boston Camera Club, 50 Bromfield street, Boston, Mass., and as soon as San Francisco is through with it, it will be started on a circuit among the applicants.

EDWARD F. WILDER,
Secretary.

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

A STATED meeting of the Society was held Wednesday evening, December 5, 1888, the *President*, Mr. FREDERIC GRAFF, in the chair.

The *Secretary* reported the receipt of a circular letter announcing the formation of the Photographic Club of Paris, composed of amateur photographers, who propose to celebrate the opening of their rooms by an exhibition on December 15th, to which members of this society were invited to contribute albums, prints or negatives. An invitation was also extended to members visiting Paris, particularly during the Exposition of 1889, to make use of the club's laboratories, dark rooms, etc. A vote of thanks was tendered to the Photographic Club for their courtesy.

The Joint Exhibition Committee reported that a meeting of the Joint Exhibition Council was held in New York, on November 10th, at which certain alterations and amendments were made in the rules, etc., which experience had indicated were desirable, and which it was thought would contribute greatly to the success of future exhibitions. Preparations for the forthcoming exhibition in Philadelphia, during the Spring of 1889, were now in progress, and circulars with rules and other particulars would shortly be issued.

Mr. RAU, Director of the Lantern Slide Interchange, announced that the slides from the Pittsburgh Amateur Photographer's Association would be shown at the Conversational Meeting, December 19th.

The amendment to the By-Laws proposed at the November meeting, providing for a Standing Committee on Lantern Slides, was taken up for consideration, and adopted as offered.

Nominations for officers and standing committees for 1889 were made.

On motion of Mr. Coates, it was resolved that the Treasurer issue as a receipt of dues paid, a ticket of membership, stating that the holder is a member in good standing for the current year, and stamped with the seal of the society.

A paper was read by Mr. Henry Harrison Suplee on "The Largest Camera in the World," being a description, particularly in its application to astronomical photography, of the Lick Telescope. See next BULLETIN.

Mr. SUPLEE also presented to the society on behalf of Messrs. Warner & Swasey, of Cincinnati, the builders of the telescope, three fine photographs, showing the instrument as mounted in the observatory.

A vote of thanks was tendered to Mr. Suplee for his interesting paper, and to Messrs. Warner & Swasey for the photographs.

Dr. CHARLES L. MITCHELL gave an interesting account of a photographic trip taken during last summer in the White Mountain region of New Hampshire. A large number of excellent slides were shown as the result of the trip.

Mr. CARBUTT showed some transparencies made on his new Flexible Negative Films, which were of great beauty. They were mounted between two sheets of plain glass, no ground glass being required. An excellent portrait negative, made on a film by Mr. Gutekunst, was also shown.

As a convenient method of using the films in ordinary holders, Mr. Carbutt showed some carriers made from sheets of ferrotype plate, the edges being bent over in such a manner that the films could be readily inserted, and firmly held so that the carriers could be placed in position in the holder.

He called attention to the absence of halation when films were used, the smallest twigs and branches of trees being perfectly sharp. Negatives taken in the building of the American Institute Fair in New York, a portion of the skylight being included in the view, were entirely free from halation when taken on the films, the decided reverse being the case when glass was used.

In reply to a question by Mr. Burroughs, it was stated that the tendency to curl in drying could be obviated by first placing the film for three or five minutes in a mixture of water 30 ounces and glycerine 1 ounce.

Adjourned. ROBERT S. REDFIELD,
Secretary.

WASHINGTON CAMERA CLUB.

REGULAR MEETING, NOVEMBER 27, 1888.

A FULL attendance of members, with a number of invited guests, were present to witness a lantern exhibition, consisting of slides made from negatives made upon the recent "field day," together with a miscellaneous assortment of other slides, quite a number of which were contributed by our guests. At the conclusion of a very enjoyable entertainment the members of the club held a regular business meeting, at which was elected one new member, the names of two others being received and posted. An amendment to "The Constitution and By-Laws," viz.: "to create the office of Corresponding Secretary," was acted upon, and J. Albert Cole was unanimously elected to that office.

At 10.30 P.M. the meeting adjourned to December 11, 1888.

REGULAR MEETING, DECEMBER 11, 1888.

Meeting called to order 8.15 P.M. *President* RICHARDS in the chair. Eleven members present. After reading and approving of the minutes of the previous meeting the club proceeded to the election of two new members. The Album Committee then reported that albums had been procured and that the committee were ready to receive prints at the next meeting for insertion therein. The next regular meeting falling upon Christmas Day, it was decided to omit same, and in place thereof a special meeting was called for December 26th. Under the head of new business the club agreed to receive and accept the proposition of the "Cosmos Club" of this city, tendering the use of their picture gallery in which to hold an exhibition of pictures and lantern slides upon a date to be mutually agreed upon in the latter part of February, 1889. Communications from several foreign societies were read and referred, with instructions to the Corresponding Secretary. There being no paper to be read, owing to the unavoidable absence from the city of the member who was to have presented the same, after an informal discussion of matters photographic, at 10 P.M. the club adjourned to December 26th, at 8 P.M.

J. ALBERT COLE,
Corresponding Secretary.

TORONTO AMATEUR PHOTOGRAPHIC ASSOCIATION.

THE regular monthly meeting was held on the evening of the 3d inst. The President in the chair. After the regular business Mr. J. G. Ramsay gave a practical demonstration in making lantern slides by contact printing and reducing by the camera. Great interest and appreciation was manifested by the members in the various operations. Much credit is due to Mr. Ramsay for the very thorough and practical way in which he handled the subject. There was a good attendance of the members and a few lady friends. F. D. MANCHEE,
Secretary.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer questions of a technical character except through the columns of the BULLETIN. *Correspondents will please remember this. No attention will be paid to anonymous communications.*

Q.—J. S. writes: Please tell me, through the columns of the BULLETIN, if there is anything that can be rubbed on the glass of the skylight that will prevent "sweating?"

A.—Try rubbing with a rag wet with kerosene oil; but don't get too much on, a mere film is the most effective. If dust adheres to it, wash off with warm soap and water and give a new coat. Nothing is perfectly effective, but the above is the best we know of.

Q.—C. G. S. writes: Will you inform me in your next BULLETIN how to precipitate hypo? I have tried a solution of sulphuret of potassium, but it still don't settle, it remains black, and it ought to be as clear as water. What causes streaks of bronze on albumen paper?

A.—Try the method with hydroxylamine, given by Dr. Vogel in his letter from Germany, in this number of the BULLETIN. Or you may add sulphuric acid to the hypo solution, after adding the potassium sulphuret, and stir it thoroughly; it will then settle. Sulphuretted hydrogen from illuminating gas, or stove gas, will give these bronze streaks after silvering, if the paper is exposed to their influence; or organic impurities in the water with which the silver bath is made will do the same.

Q.—F. K. H. writes: Having had, to me at least, an unusual experience with my tintype bath, I write you to ask for an explanation. I mixed a bath, 40 grains, slightly acid, with cistern water. It would not work. (I found after that the tin roof was rusty.) I then boiled down the bath, but could not quite fuse it. I made it up again with distilled water; but it did no better than before, then I boiled it down again, intending to have it refined. I could not find my glass rod to stir it with, when it seemed on the point of fusing, and, thinking it made no difference, picked up a bit of pine stick. As soon as this touched the solution, which was thick like molasses, it burst into a blaze, with the same way of fuming that nitrate of potash or chlorate of potash has. I found when I put out the fire that the wood was replaced by a gray substance having the fiber of charcoal, and, thinking it was metallic silver, I broke the stick into bits and threw them into the dish until the liquid was all burned out, and I had a lot of pieces of light colored gray sticks and some charcoal. I added some distilled water to the dirty mess, put it on to boil, and then poured in pure nitric acid. It cleared immediately, and the silver all dissolved. When it was boiled down it fused perfectly, and made up into a perfect bath. Now, is this the way of clearing an old bath that is impure and won't fuse new? and what effect does the wood have in clearing the bath? and why does the silver completely take the place of the wood fiber like a petrifaction? It can, however, be easily crumbled in the fingers into a gray mud. If it is anything new and worth anything to any one else, I am very glad. It is new to me, and I don't know enough of chemistry to explain to my satisfaction how the wood took out the impurities, probably iron rust, which was in the bath. Can you give me a good formula for hydroquinone developer?

A.—Your experience with the nitrate bath is certainly a curious one. We have known for some time that nitrate of silver fused upon charcoal will be reduced to metal and take the form of the fibers of the charcoal; and the fusion will be accompanied by a blazing (deflagration) of the coal. We do not know that the pine stick has any purifying effect upon the silver nitrate, except that the heat of the combustion causes it to fuse more perfectly. In regard to the hydroquinone developer, try the new formula given by Dr. Vogel in his letter from Germany in this issue of the BULLETIN. We think that if half the sodium carbonate is replaced by potasium carbonate it will work better on American dry plates, but be careful that the potassium carbonate is pure; salts of tartar are the best form.

Q.—C. A. K. writes: Can you inform me through the next BULLETIN if I can take a photograph out of doors at night by the light of an arc electric light? Will I have to use the flash powder? Should the exposure be time or instantaneous? If time, about how long for a group?

A.—We think that an out-door group at night could readily be taken if the electric light is properly arranged; particularly, that none of the lights are seen in the camera. If flash-light is used, arrange the group against a light back ground and flash a light, high up on both sides of the group, out of the range of the lens. With electric light and light background, fifteen to twenty seconds would be needed, according to the sensitiveness of the plate used.

Q.—C. E. M. writes: Would like to know what is the cause of a "flakey" or "crackled" appearance in my finished prints? The paper when first silvered does not look just right, it is rather dull, and shows signs of the above result. My printing bath is 55 grains strong, neutralized with bicarbonate soda. I wash prints thoroughly, at which time there seems to be an abundance of precipitate. Redden with salt; rinse well and tone with the following: 5 grains gold chloride to 10 ounces water. Neutralize with bicarbonate of soda, then into a salt bath, then rinse and into hypo; then salt again, then wash.

A.—Your trouble is probably due to the fact that the paper is too dry. Hang it up in a damp room, or in a room with sprinkled water on the floor, overnight, and it will be ready to silver next morning, without any more crackled appearance.

Q.—T. J. A. writes: Please tell me in the next issue of your ever welcome BULLETIN, how much muriatic acid and nitric acid is required to dissolve or cut one gold dollar, and how much water should be added after it is dissolved. Also, should it be made alkaline as soon as it is cut and the water put in with the acids. I would like the preparation for toning. Is not this the formula:

Muriatic acid............ 1 ounce.
Nitric acid.............. ½ "
To cut one gold dollar add—
Water.................. 8 ounces.

For use, 1 ounce of the above solution to 8 ounces of water, made alkaline with carbonate of soda.

A.—The formula you give is a good one. Put the mixture of acids, without any water, upon the coin, and warm it to start the action, and also keep warming to continue the action. If the coin is not completely in solution use more of the mixture of acids, in the proportion of two-thirds muriatic to one-third nitric. Use a good porcelain dish to make the solution in, and evaporate until the dissolved gold is as thick as syrup. Now dilute with six ounces of water, add the bicarbonate of soda until alkaline, and allow to stand six or eight hours, then filter and make up to eight ounces with water.

Views Caught with the Drop Shutter.

WILSON'S MOSAICS FOR 1889 are out, and should be obtained by all who need practical hints, practically given. We shall have more to say about them in our next issue.

THE Holiday Number of "Sun and Shade" presents a number of notable plates of children in painting and photography, and is a most interesting tribute to the season. Among its pictures are reproductions of the "Madonna della Sedia" of Raphael; one of J. G. Brown's famous children, a boy blowing bubbles; a delightful little panel picture, of "Flirtation" between a Japanese and an American doll, painted by C. D. Weldon—all in photo-gravure. Direct photography contributes two remarkable plates, a child statuette, from real life, by Fitz-Guerm, of St. Louis, and a beautiful plate in colors of a child's head by Rockwood, the latter a very novel and successful bit of color printing.

W. V. RANGER, of Syracuse, and F. L. CORNELL, of Boston, have formed a partnership and opened a new studio in the Butt's Building in Rochester, N. Y. The local papers have some very complimentary notices of the new studio, and we do not doubt but that it deserves it.

L. M. PRINCE & BRO., the well-known photographic merchants of Cincinnati, send us a very pretty little album of views in their city. They will please accept our best thanks for same.

THE AMERICAN ANNUAL OF PHOTOGRAPHY is at hand, and looks handsome. We shall say more about it in our next. We can now only thank the publishers for kindly sending us a copy.

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